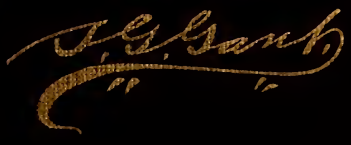
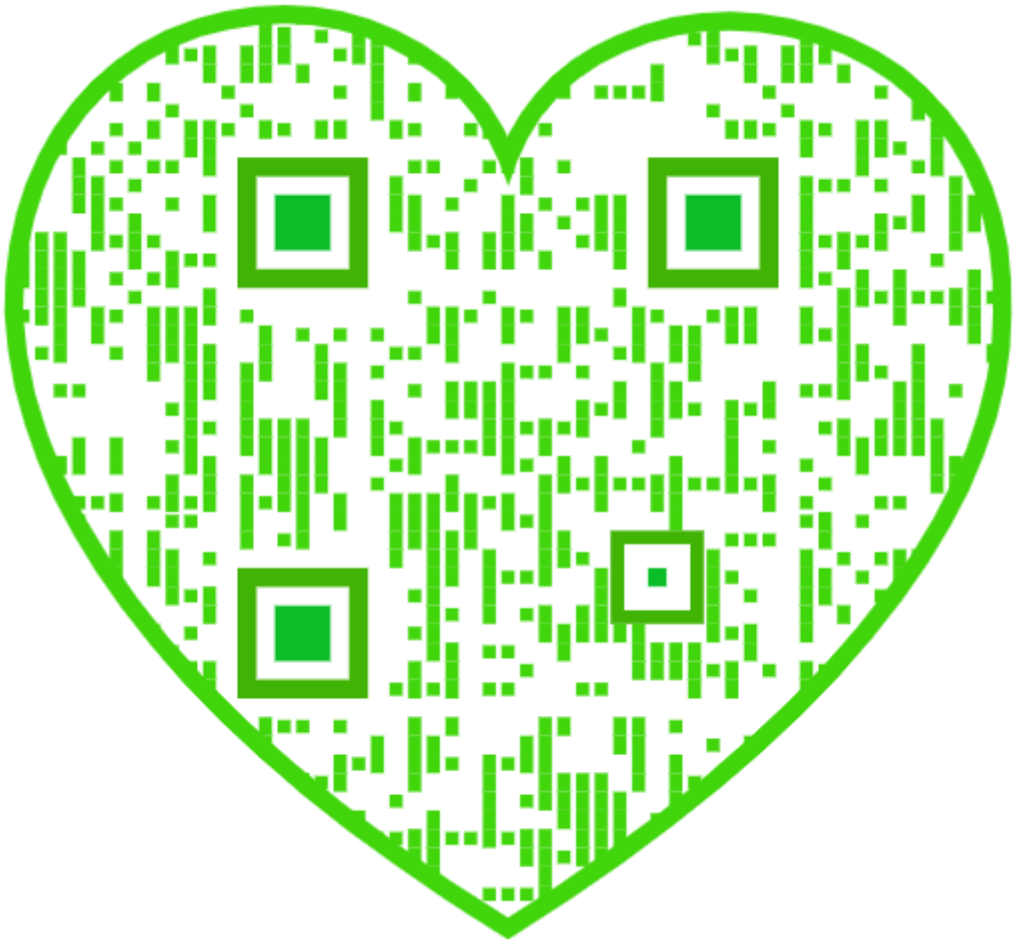
DISEASES OF THE RECTUM, ANUS AND CONTIGUOUS TEXTURES





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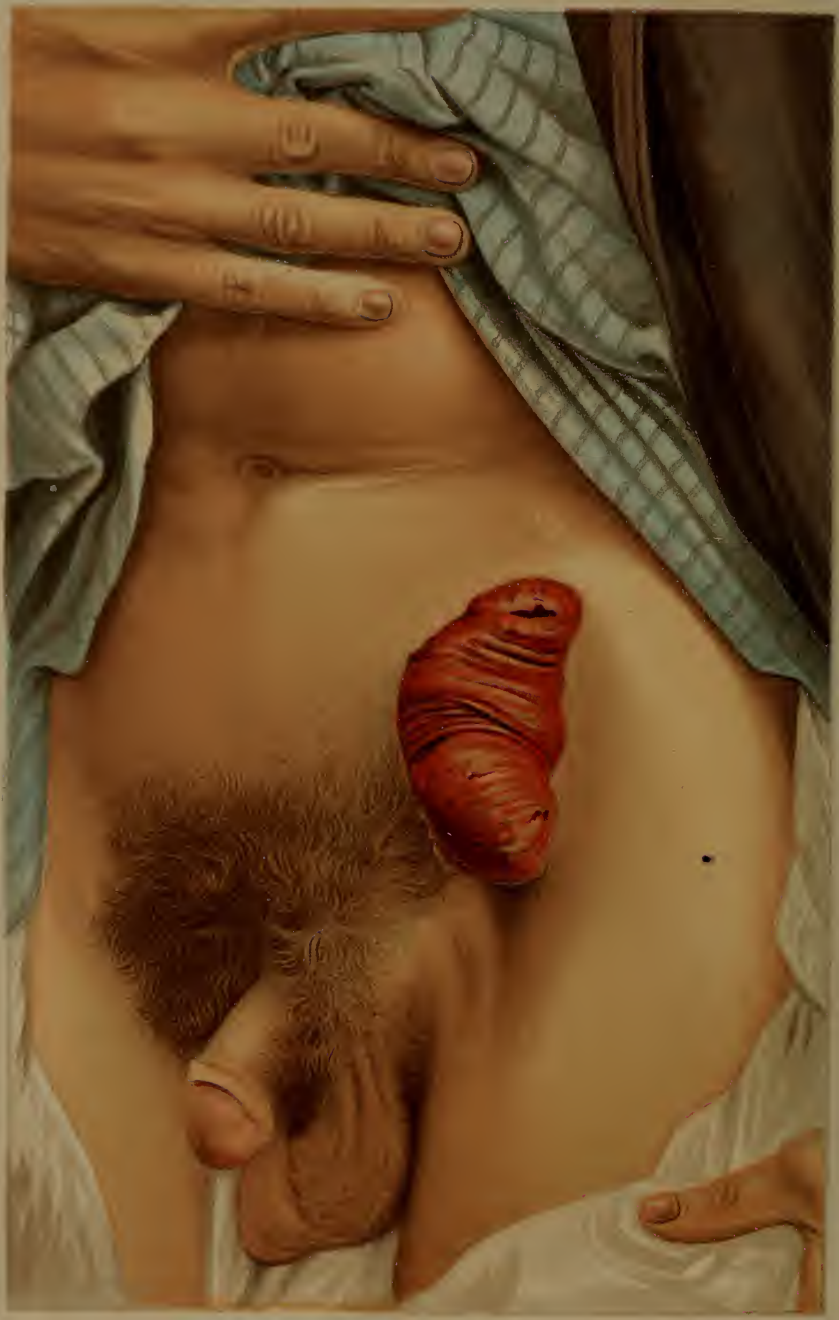

PLATE I.-TYPICAL CASE OF PROCIDENTIA THROUGH ARTIFICIAL ANUS.

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DIAGNOSIS AND TREATMENT

OF

Diseases of the Rectum, Anus,

AND

CONTIGUOUS TEXTURES.

DESIGNED FOR PRACTITIONERS AND STUDENTS.

By S. G. GANT, M.D.,

PROFESSOR OF DISEASES OF THE RECTUM AND ANUS, UNIVERSITY AND WOMAN'S MEDICAL COLLEGES; LECTURER ON INTESTINAL DISEASES IN THE SCARRITT TRAINING-SCHOOL FOR NURSES; RECTAL AND ANAL SURGEON TO ALL-SAINTS, GERMAN, SCARRITT'S HOSPITAL FOR WOMEN, AND KANSAS CITY, FORT SCOTT, AND MEMPHIS RAILROAD HOSPITALS, TO EAST-SIDE FREE DISPENSARY, AND TO CHILDREN AND ORPHANS' HOME, KANSAS CITY, MO.; MEMBER OF THE AMERICAN MEDICAL ASSOCIATION, NATIONAL ASSOCIATION OF RAILWAY-SURGEONS, THE MISSISIPP VALLEY MEDICAL, THE MISSOURI VALLEY MEDICAL, AND THE MISSOURI AND KANSAS STATE MEDICAL ASSOCIATIONS; OF THE KANSAS CITY ACADEMY OF MEDICINE, JACKSON COUNTY, AND OF THE KANSAS CITY DISTRICT MEDICAL SOCIETIES, ETC., ETC., ETC.

WITH TWO CHAPTERS ON "CANCER" AND "COLOTOMY"

BY

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THIS VOLUME

IS

DEDICATED BY THE AUTHOR TO HIS FATHER,

JACKSON D. GANT, M.D.,

AS A

TOKEN OF AFFECTION.

PREFACE.

THIS treatise is the result of an effort to give to the practitioners and students of medicine a concise, yet practical, work. I have not attempted to give a detailed discussion of theories and antiquated views of unrecognized value. Of recent years so much has been written upon "Asepsis and Antisepsis" and "Rectal Reflexes" that I have deemed it best not to set apart separate chapters for these subjects, but have given them sufficient attention throughout the entire work. Two chapters have been written that are new in a work of this kind,—one on "Railroading as an Etiological Factor in Rectal Diseases" and one on "Auto-Infection from the Intestinal Canal." I have given these subjects distinct chapters of their own, for I am sure that their importance has been very much underrated by writers generally.

In words in which the diphthong is employed I have made use only of the vowel sounded; thus, in the words *hæmorrhoids*, *fæces*, *diarrhœa*, etc., I have omitted the superfluous ones, spelling them thus: *hemorrhoids*, *feces*, and *diarrhea*. In order to present a comprehensive work I have made frequent reference to the standard works on diseases of the rectum and anus and to reprints and monographs too numerous to mention. Among the text-books which I have consulted I desire to mention the following: Allingham, Mathews, Cripps, Kelsey, Cooper and Edwards, Van Buren, Ashton, Curling, Ball, Quain, Henry Smith, and Bodenhamer on hemorrhoidal disease. I have, in each instance, endeavored to give proper credit to authors, and if I have failed in a single case it has been unintentional.

Now comes the pleasing duty of expressing my indebted-

ness to professional friends who have rendered me valuable assistance.

I was fortunate, indeed, in getting Mr. Herbert William Allingham, of St. Mark's Hospital, London, to write two chapters on "Cancer" and "Colotomy," for I doubt if there is any man living more capable of dealing with these important subjects than he.

I wish also to acknowledge my obligations to Dr. J. C. Stewart for valuable assistance rendered in helping me to perfect the many original diagrams and drawings seen throughout the work; and to my friends, Drs. W. F. Kuhn and Daniel Morton, for correcting my manuscript. To my publishers, The F. A. Davis Co., I wish to express my gratitude for the many courtesies received. To The Burk & McFetridge Co., the gentlemen who made the many beautiful chromo-lithographic plates, I will only say that the excellency of their work has surpassed by far my most sanguine expectations. Trusting that my labors may prove to be of some practical value to the profession, I respectfully submit it for their perusal.

S. G. G.

Kansas City, Mo.,
March, 1896

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Diseases of the Rectum, Anus, and Contiguous Textures.

CHAPTER I.

INTRODUCTION.

In the whole range of surgical pathology no other class of diseases among civilized communities is so prevalent, causes more suffering, and induces so many varied reflex and distressing sympathetic affections as the diseases occurring about the anus and rectum. This is because of the structure of the anus and rectum, their peculiar office in the economy of nature, and their relation to the important organs in their immediate vicinity. Happily for the sufferers, no other class of complaints succumbs more readily to judicious and, in the majority of cases, to simple treatment, when properly applied at the onset of the disease. Unfortunately, from mistaken delicacy or carelessness, patients often postpone seeking proper advice until the local symptoms have become unbearable or the constitution seriously deranged; or, from the prominence and severity of some one of the reflex or sympathetic effects, they are induced to adopt a variety of empirical remedies which fail in the restoration of health and are often productive of pernicious results. Many of these diseases spring from irregularities in habit engendered by sedentary pursuits, or they result from indulgence in the luxuries of civilized life. They are, therefore, more prevalent in the middle and upper circles of society; though they are not infrequently found in all classes.

Diseases of the rectum have been mistaken for prostatic, uterine, and cystic affections. This renders a careful examina-

tion, both visual and digital, absolutely necessary. Unless the surgeon understands the anatomy of the parts he cannot comprehend the physiology of the rectum, much less the diseases to which it is liable. When well acquainted with it and the surrounding parts, he not only performs the operation with more deftness, but is enabled to understand the functions of the several organs and their mutual relations. Therefore, the subject of the following pages cannot be introduced in a more useful manner than by briefly describing the anatomy of the rectum and its relation to the several organs contained in the pelvis.

CHAPTER II.

ANATOMY AND PHYSIOLOGY OF THE RECTUM AND ANUS.

It is not our intention to go into the minute anatomy of the rectum and the anus, but to give such information that the operator may work with a degree of intelligence. The inferior portion of the colon and alimentary canal is called the rectum, —a misnomer in the human species; the term originated probably from the usual straight form that this organ presents in the lower animals. The length varies from six to eight inches (15 centimetres to 2 decimetres), the latter measurement being more common in advanced life, for as age increases the tortuosity of the bowel is more marked. Above it is continuous with the terminal portion of the sigmoid flexure of the colon, situated in the left iliac fossa, and terminating below at the anus. In rare instances the position of the abdominal viscera is reversed; in such cases the rectum would necessarily commence on the right side. At its commencement it curves downward toward the right side of the pelvis three and one-half inches (8.8 centimetres), by which it is brought to the median line of the sacrum at a point opposite the third sacral vertebra; it then descends obliquely forward and downward for about three inches (7.5 centimetres), at which point it is found opposite the apex of the coccyx; from this point it turns upon itself, backward and downward, for about one and a half inches (3.8 centimetres), thus completing its course at the anus. It is obvious, in introducing the finger into the rectum, that it should be passed upward and forward. Like the hollow abdominal viscera, the rectum has three coats,—peritoneal, muscular, and mucous,—the first being only partial, while the others are continuous throughout. Ordinarily it is that portion

which is not covered by peritoneum that is the seat of the disease.

Peritoneal Coat.

The upper portion of the rectum is in contact with the sacrum, internal pudic, and sacral plexus, in front with the posterior portion of the bladder in the male, and with the uterus in the female. Sometimes a convolution of the small intestine may intervene. At its commencement the rectum is generally surrounded by the peritoneum, which binds it to the sacrum; but lower down it covers the anterior surface only, and is then reflected on to the bladder, forming the recto-vesical pouch. The uterus and vagina are interposed between it and the bladder in the female. This pouch may extend down to within an inch (2.54 centimetres) of the prostate; the distance is liable to variations depending on the age and the distension of neighboring organs. In the newborn it may extend to within an inch (2.54 centimetres) of the anus. The distance increases after the fifth year; in old age with enlarged prostate the peritoneum goes still higher up. The distance from the anus to the lower portion of the fold has been a subject of much controversy both at home and abroad. We shall not enter the discussion, but will state that our observations lead us to believe that two and a half inches (6.35 centimetres) in the male and three and a half inches (9.9 centimetres) in the female, with an additional inch (2.54 centimetres) when both bladder and rectum are distended, would be a fair average distance.

Muscular Coat.

This coat is thicker and stronger than other portions of the large intestine. It consists of two layers,—viz., circular or inner and longitudinal or outer. The fibres of the latter are partly prolongations of the colon, while some are peculiar to the rectum. They are more numerous in the anterior and posterior portions of the rectum, and by their action prevent the rectum's being thrown into folds as in the colon. They also seem to be

more abundant in the upper than in the lower portion. The circular fibres are neither particularly strong nor numerous in the upper portion, but become stronger and more abundant at the lower end of the rectum. There they form a muscular band, about an inch (2.54 centimetres) in width, constituting the internal sphincter muscle.

Mucous Membrane.

The mucous membrane is thicker and more vascular than any other portion of the large intestine. It contains many mucous follicles, which are distinct. It glides over the tissues beneath and is so abundant as to be gathered into folds, which diminish in proportion as the bowel becomes distended. Extending from one fold to another, at times little arches may be seen forming small pockets, which are at the present writing the subject of much controversy. It is well to observe them closely, however, for it is an easy thing to mistake the mouth of one of these pockets for that of a blind internal fistula. The introduction of a probe will quickly settle the diagnosis and determine if it be a fistula or not. These follicles are very numerous and, under the microscope, present a honey-comb appearance. They prove of great value from their absorbing power,—a fact demonstrated by the good results derived from rectal medication. Sometimes enlarged papillæ are to be seen about the anal margin.

Arterial Supply.

The arteries of the rectum are derived from three distinct sources:—

1. The superior hemorrhoidal, from the inferior mesenteric.
2. The middle hemorrhoidal, from a branch of the internal iliac.
3. The inferior hemorrhoidal, from the internal pudic after it has re-entered the pelvis.

The Superior Hemorrhoidal.—This artery divides into two branches, which course along the posterior wall of the rectum. They are at first superficial, but soon perforate the longitudinal fibres and give off a number of branches, which anastomose on the internal surface of the rectum, not only with each other, but with the middle and frequently with the inferior hemorrhoidal arteries. The main branches run parallel with the bowel. This accounts for the smallness of the hemorrhage from incisions made in the long axis and the profuseness of the same made at a right angle to the long axis of the bowel.

Middle Hemorrhoidal Arteries.—They vary in size and take an oblique course downward to supply the middle third of the rectum.

Inferior Hemorrhoidal Arteries.—They send branches upward as well as downward to anastomose with the other hemorrhoidal arteries to supply the levator ani, sphincter muscles, and cellular, fatty, and tegumentary tissues in the anal region.

Veins of the Rectum.

The veins correspond in name with the arteries. The middle and inferior hemorrhoidal return the blood from the anal region to the internal iliac. The hemorrhoidal plexus of enlarged and anastomosing veins is situated in the lower part of the rectum and from it proceeds the "superior hemorrhoidal vein," which returns the blood from the rectum proper to the portal system. This vein and its branches pass upward under the mucous membrane for a distance of about three or four inches (7.62 or 10.16 centimetres), then perforate the muscular coat, and can be seen on the outside of the bowel. Verneuil has laid much stress on this anatomical fact, claiming that the veins pass through muscular button-holes, which have the power of contracting around them, closing their calibre and preventing a return of the blood to the liver. In this anatomical arrangement, he believes, is to be found the active cause of internal hemorrhoids.

Nerves of the Rectum.

They are derived from the two great classes which go to make up the nervous system,—the cerebro-spinal, from the system of animal life, and the sympathetic, or system of organic life. The former are from the sacral plexus and the latter from the mesenteric and hypogastric plexuses. The muscles of the anal region are supplied by branches of the sacral nerves, while the superficial perineal of the pudic supplies the levator ani and skin in front of the anus. The inferior hemorrhoidal (of the pudic) branch supplies the lower end of the rectum and anus. The pudic is controlled by the same part of the cord as the sciatic. Hence irritation from a fissure or ulcer located within the anus may be transferred down the limbs or to other distant parts. Mr. Hilton alludes to pain in the heel as a frequent symptom of fissure. The intimate relation of this nerve to the genito-urinary organs explains the frequency with which disorders of micturition are associated with rectal affections. The upper and middle portions of the rectum are much less sensitive than the lower, as has been proven by experiments made by Bodenhamer. The pain increases in proportion as the disease encroaches upon the anal margin; hence disease, malignant or otherwise, situated high up may cause little pain. The sympathetic nerve is distributed to the rectum and anus and is derived from the hypogastric, which is formed by branches from the aortic plexus. It also receives branches from the lumbar and sacral plexuses.

Lymphatics.

The absorbents of the rectum and anus are much more numerous than is generally supposed. They consist of two systems, those of the anus being distinct from those of the rectum, the former going to the inguinal and the latter to the sacral and the lumbar glands. This accounts for the clinical fact of infiltrated inguinal glands from a similar condition in the rectum. Mr. Cripps, however, has recorded two cases of

infiltrated inguinal glands when the seat of the disease was situated high up in the rectum.

The Anus.

The anus is a small oval orifice, directed downward and backward, situated about an inch (2.54 centimetres) in front of the extremity of the coccyx, between the tuber ischii (but above them in the male), in the median line between the buttocks. It is covered internally by integument, which is firm, soft, and provided with papillæ, hair, and sebaceous follicles. The latter secrete an unctuous fluid with an unpleasant odor. The anus can be freely dilated, but, when closed, the surrounding skin is thrown into numerous folds.

Muscles of the Rectum and Anus.

The muscles that especially interest us in the study of rectal diseases are three in number,—viz., the external and internal sphincters and the levator ani.

External Sphincter.—This muscle is situated immediately beneath the integument. It arises from the tip of the coccyx. After surrounding the anus in the form of an ellipse, it is inserted in front into the central tendon of the perineum. The action of the muscle is to close the anus and assist in the expulsion of the feces in conjunction with the expiratory muscles. Its contracting power varies in different people and under certain pathological conditions. For example, it will be found firmly contracted when a fissure is present. In most cases of malignant diseases it is loose and flabby. We always anticipate serious rectal diseases when there is no sphincteric resistance to the introduction of the finger.

Internal Sphincter.—This muscle is a flat, involuntary, muscular band lying immediately above the external sphincter. It is from three-fourths of an inch (1.9 centimetres) to one inch (2.54 centimetres) in breadth and one-sixth inch (4.2

PLATE II - LEVATORES ANI AS SEEN FROM ABOVE.

PLATE III - LEVATORES ANI, SIDE VIEW

millimetres) in thickness. Its fibres are somewhat paler than those of the internal. United with this muscle are the unstriped bands, which arise from the anterior surface of the coccyx (recto-coccygeus muscle). The recto-coccygeus muscle embraces the lower end of the rectum in a fork, and it draws the rectum upward toward the apex of the coccyx, when it is forced down during the act of defecation.

Levator Ani.—The origin and insertion of this muscle, as well as its action, have been the subject of much study and controversy. From the dissections which we have made we believe, with Mr. Cripps, that a large portion of the fibres arises from the inner surface of the symphysis and from half an inch (1.27 centimetres) of the anterior portion of the white line, and passes obliquely downward and backward to be inserted on the sides of the coccyx. The fibres cross the rectum at right angles two and a half inches (6.35 centimetres) above the anus. (See Plates II and III.)

The action of the levator ani is to compress the sides of the rectum and the neck of the bladder, and in the act of defecation, when the sphincter contracts to open the anus, it closes the urethra. This explains in part the well-known difficulty of discharging urine and feces at the same time. We have made two diagrammatic drawings (see plates) which show very nicely the relation of the levator ani to the rectum.

This muscle also partly forms the floor of the pelvis to support the pelvic organs. In addition to this it has a voluntary sphincteric action, which can be demonstrated by introducing the finger into the bowel and requesting the patient to draw up the anus as much as possible, when a contraction may be felt from one and a half to two inches (3.8 to 5.08 centimetres) above the anus. This Mr. Cripps attributes to the levator ani. This action would, in part, account for the control of the bowel that is frequently seen after complete destruction of the sphincters. Again, after certain rectal operations where the sphincters have been thoroughly paralyzed, patients often

complain of the anus's jerking. This we attribute to the action of this muscle.

The Rectum.

The rectum differs from other portions of the large intestine in that it has no longitudinal bands and it is non-sacculated in appearance. When distended to its fullest capacity it fills a large portion of the pelvic cavity. Internally it presents three or four transverse folds. According to Houston,* the largest one is situated three inches (7.62 centimetres) above the anus, opposite the base of the bladder; the second, at the upper end of the rectum; the third, midway between the two just named; while the fourth (rarely present) will be found one inch (2.54 centimetres) above the anus. They form, as it were, valves which occupy from one-third to one-half the circumference of the bowel, the margins of which are directed upward; they are located on opposite sides, thus forming a kind of spiral tract, the object of which is to support the fecal mass and prevent a too rapid descent to the anus. The folds become almost obliterated when the bowel is distended. From the study of the anatomy we necessarily are led to the consideration of the physiology of the rectum and anus, to which attention is now invited.

Physiology of the Rectum and Anus.

It is a noticeable fact, to those accustomed to making rectal examinations, that the rectum is found to be empty, in a large percentage of cases, until just before defecation takes place. The prevailing opinion seems to be that the fecal mass is arrested and supported, in the upper part of the rectum, by the folds previously described, till just before expulsion of the same takes place. There has been and still is much controversy as to what produces the sensation which precedes the expulsion. Some claim it to be due to contact. This is hardly probable, for we have seen large masses collect where no sensa-

* Dublin Hospital Reports, vol. v, p. 158.

tion was felt whatever. Others ascribe it to some irritant produced in the retained feces. This appears less reasonable than the other, for we know that the sensation is produced immediately on the discharge of the fluid feces into the rectum in cases of diarrhea. While I am not positive as to what causes the sensation, I am inclined to believe it is of an organic nature, as a result of some intestinal change which takes place before the mass reaches the rectum. The peristaltic movements which precede defecation are increased by sphincteric resistance. At the proper time, however, the muscle relaxes and, by the aid of the abdominal muscles (especially the internal oblique and diaphragm), together with the levator ani, the fecal mass is expelled. The frequency of the evacuations depends largely upon habit and diet. Actions occur more frequently in males than in females. Normally the bowel ought to act at least once in every twenty-four hours. It is not an uncommon occurrence, however, to see patients who do not have an action more than once in three or four days or even a week without the use of some medicine. This delay is often due to irregular habits in going to the stool.

CHAPTER III.

SYMPTOMATOLOGY.

Before taking up for consideration the individual rectal diseases we desire, in a general way, to give the symptoms which one would be likely to meet in the treatment of this class of diseases, and to note their value as a guide to correct diagnosis. Among the more prominent ones we might mention are: pain, which may be confined to the neighborhood of the pelvis or reflected up the back or down the limbs; discharges of blood, pus, or mucus; protrusions, constipation, diarrhea, and itching about the anus.

Pain.

Pain may vary from a slight discomfort to intense pain. In getting the history it is well to inquire if it is constant, dull, or sharp in character; if it is about the anal margin or high in the rectum, as well as its relation to defecation, to find out if it precede, accompany, or follow it; also as to its duration, and accordingly some idea may be formed as to the nature of the disease. Pain may be expected when any of the following conditions are present:—

1. Fissure.
2. Hemorrhoids.
3. Ulceration.
4. Morbid growths.

Fissure.—In fissure the pain is very severe and out of all proportion to the extent of the lesion. It usually comes on during the act of defecation, is most intense during the same, and lasts for some time afterward. It is described as being of a hot, smarting character, severe, and radiating toward the coccyx.

Hemorrhoids.—Pain due to hemorrhoids depends on the size of the tumor, the location, and the amount of the inflam-

mation present. External piles, unless inflamed, cause very little pain. The only inconvenience is a sensation of fullness and heat. If the pile chance to be of the thrombotic variety, there will be much pain and tenderness until the clot is turned out.

Internal Hemorrhoids.—Like the external variety, they often produce a sensation of heat and fullness; the pain will be more or less severe, depending upon the size, number, and location of the tumors. Should there be only one or two tumors situated above the grasp of the sphincter, they will cause very little annoyance; while if they are large and within the grasp of the sphincter to such an extent as to become strangulated, the pain will be intense and of a drawing and burning character, with a constant desire to strain down, which results in the tumors' swelling and acting as foreign bodies. They keep the sphincter in a state of spasmodic contraction in its endeavor to expel the same. Should the tumors continue to fill and the strangulation is not relieved, ulceration will probably occur, inducing additional pain, which is likely to continue until the piles have been operated upon or taken nature's course and sloughed off.

Ulceration.—In ulceration of the rectum the amount of pain depends upon the location and extent of the disease. If it is situated high up and is not too extensive, there will be a minimum amount of pain. On the other hand, when it is located near the anal margin, the pain is very great; in fact, it increases in severity as the anal margin is encroached upon.

Malignant Disease.—Pain in malignant disease, like that of ulceration, depends largely upon the extent and location of the disease, being much greater when situated low down. It increases as the disease becomes more fully developed. Much pain will be experienced every time the hardened feces pass over the diseased parts to be expelled, and after a time patients suffer from alternate attacks of constipation and diarrhea. During the latter the pain is of a smarting, burning character,

and the straining almost unbearable. Strange to say, in some cases of malignant disease, even though it be extensive, little pain is experienced. This occurs only when the disease is located high up in the rectum. Because of the slight pain the surgeon, in all probability, will not be called until the disease has progressed to such an extent that little can be done.

Protrusions.

In getting the history it is desirable to find out if anything protrude from the anus. If so, ascertain if the protrusion occur during defecation only or at irregular times, if it return of its own accord or if the patient return it himself, if it is constantly present, and if it is accompanied by hemorrhage. A protrusion, under such circumstances, might be the result of a variety of diseases, viz. :—

1. Prolapsus recti.
2. Internal hemorrhoids.
3. Polypi.
4. Villous growths.

Prolapsus.—The tumor, in cases of prolapsus, is soft and smooth. The color of the mucous membrane and the whole circumference of the bowel is involved. Its size depends upon the extent of the prolapsed bowel. As a rule, it induces little suffering unless strangulation has taken place.

Internal Hemorrhoids.—The protrusion of internal piles can be distinguished from that of prolapsus in that the tumor or tumors are distinct and do not involve the entire circumference of the bowel. There will be very little pain until strangulation takes place; then the pain and the swelling become exaggerated. At an early stage of the disease the tumors come down, but can be readily replaced; while in cases of long standing they remain outside the anus nearly all the time.

Polypi.—A polypus, like an hemorrhoidal tumor, usually comes out during defecation, the extent of which depends upon the length and size of the pedicle. It may return spontane-

ously or have to be returned by the patient himself. This sometimes becomes impossible, when strangulation occurs, and then it sloughs off.

Villous Tumors.—These are vascular in character, but resemble the others just described, in that they are made to protrude during defecation.

Hemorrhage.

In the order of frequency as a symptom, hemorrhage comes next to pain. The blood may be voided pure or mingled with feculent matter, or appear in streaks on the surface of hardened feces. Mucoid discharges tainted with blood are frequently to be seen. Hemorrhage of the rectum may be a symptom of any of the following diseases:—

1. Internal hemorrhoids.
2. Prolapsus.
3. Fissures.
4. Ulceration.
5. Stricture.
6. Malignant disease.
7. Polypi.
8. Villous growths.
9. Wounds and the presence of foreign bodies in the rectum.
10. Hemorrhage from the stomach.

Internal Hemorrhoids.—The amount of hemorrhage depends upon the case. It is usually started by straining during stool. In one case only a few drops will escape, while in another the flow may be very profuse; in others there may be a continuous dropping for hours after stool. The hemorrhage is usually of a venous character. We have on several occasions, however, witnessed hemorrhages which were apparently arterial in character. It is not essential that the tumor protrude in order to have bleeding.

Prolapsus.—Hemorrhage is of rare occurrence in cases of prolapsus unless ulceration is present.

Fissures.—In fissures of the anus bleeding is usually scant. It follows defecation, is of short duration, and is more frequently to be seen in streaks on the hardened feces.

Ulceration.—In this disease the bleeding depends somewhat upon the extent of the ulceration and its location. The discharge rarely consists of pure blood, but of blood mixed with muco-purulent matter. Sometimes it can be seen in splotches on the feces. In the more severe cases it may become alarming, especially in cases of rapidly spreading, specific, or malignant ulceration.

Stricture.—Stricture accompanied by bleeding is of frequent occurrence. When mixed with pus the discharge resembles coffee-grounds to a certain extent, especially when it has been retained in the rectum for a considerable length of time.

Malignant Disease.—In this disease bleeding almost invariably takes place. In the early stage the bleeding is due to congestion and is slight; but when ulceration commences, it may be profuse and either venous or arterial in character or both. It may occur in the intervals of defecation. Several cases of death from the bleeding of these growths have been reported.

Polypi.—Hemorrhage from polypi is rare and is seldom profuse.

Villous Growths.—In these growths the bleeding may occur during, preceding, or following the act of defecation. It is usually slight, but at times becomes profuse.

Wounds and Foreign Bodies.—Hemorrhage in these cases depends entirely upon the location and extent of the injury.

Stomach.—In cases of hemorrhage of the stomach where the blood has not been vomited up, it may pass downward and be discharged from the rectum. Such discharges are of a blackish color, and may be mistaken for indications of some rectal disease.

Constipation.

The next symptom in point of frequency is constipation. There is nothing specially characteristic about this symptom,

for it may be a result of sluggish peristaltic action or of a great variety of other pathological conditions, such as:—

1. Fissures.
2. Stricture.
3. Malignant growths.
4. Impaction of feces.
5. Compression of the rectum.

When caused by fissures it is owing to the patient's deferring defecation as long as he possibly can on account of the pain it induces. It is sometimes a symptom of impacted feces or compression of the rectum. Frequently it is a result of pressure from a misplaced uterus, enlarged prostate, or a tumor of some kind. Constipation is usually the first symptom to manifest itself in stricture of the rectum, due to the impediment. It may be more or less severe, according to the tightness of the constriction. It very nearly always alternates with diarrhea in cases of malignant stricture, when fully developed.

Diarrhea.

Diarrhea and discharges from the bowel form a group of symptoms met with in many diseases occurring in the rectum. We think that in all cases of suspected rectal disease a careful examination should be made of the excreta to ascertain if it is natural in shape and consistence, for various unnatural discharges, such as blood, pus, mucoid secretions, and elements of tissue, will be found therein. Diarrhea may appear as a symptom of

1. Ulceration.
2. Stricture.

Diarrhea may be a symptom of any form of rectal ulceration which becomes extensive. It is worse on arising in the morning and after exercise or exposure to cold. The discharge, which resembles coffee-grounds, may be mixed with muco-purulent matter and blood. In cases of stricture the diarrhea frequently alternates with constipation. The actions are more frequent, scanty, and fluid in character than in ulceration.

Diarrhea is almost invariably present in malignant disease, and it is not infrequently a symptom of impaction, from the fact that the watery portions may pass around the fecal mass and be discharged. Mucoid and purulent matters may be discharged at times in varying quantities. They can be recognized by their color and very peculiar odor.

Feces.—A close examination of the feces will frequently be of service in making a diagnosis. Their shape may be altered when the calibre of the bowel is constricted from any cause, especially when it occurs low down. In appearance, under such circumstances, the feces may resemble pipe-stems; again they may be grooved or flattened and ribbon-like. When soft, the alteration may be due to a spasmodic contraction of the sphincter; hence, this change is not always indicative of organic disease. Again, in cases where the constriction is located high up, the feces may accumulate below it and be discharged comparatively normal in shape and size. Their shape may be altered from an enlarged prostate, which has been known to cause total obstruction, or from an impaired sphincter, because of their not being retained until well formed, for we know that fecal incontinence is not an infrequent complication of rectal cancer and sometimes occurs in cases of prolapsus of long standing.

Pus.—Pus may be discharged from the bowel because of the bursting of an abscess, rectal inflammation, internal piles, ulceration, and in cases of stricture. The quantity may be large or small and the color light or dark, depending upon the extent of the lesion and the other discharges intermingled with it. In this connection we might add that mucoid discharges are present in cases of prolapsus, invagination, and villous growths, while tissue-elements and *débris* are found in the stool where extensive ulceration is present.

CHAPTER IV.

EXAMINATION OF THE RECTUM AND ANUS.

Having considered the symptomatology of rectal diseases and their diagnostic import, it now remains for us to describe the best methods of examining the rectum which will give us the most information concerning cases coming to us for treatment. No patient should be prescribed for until both a visual and a digital examination has been made. Because a patient says he has piles or fistula and his family physician affirms the diagnosis, we should not be deterred from making a careful examination in each case to find out just what disease we have to combat. Those of us who treat a large number of these cases know what absurd mistakes both physicians and patients frequently make as regards a correct diagnosis. The blame in many instances should be placed upon the physicians, many of whom are only too glad to confirm the patient's diagnosis without the trouble of making an examination and proceed to prescribe some ointment or lotion when they are ignorant of the real disease.

It is not an easy matter, in many cases, to get patients to submit to an examination, especially women. We have made a rule to have nothing to do with such persons unless they do consent, for treatment carried on in the dark will prove unsatisfactory, both to the patient and to the physician. If possible, the examination should be preceded by a thorough cleaning out of the bowel by some laxative followed by an enema. Unless this precaution is taken, when the speculum is introduced a view of the upper portion of the rectum may be obstructed by an accumulation of feces.

Position.

For an ordinary examination we much prefer the semi-prone of Marion Sims. The patient is placed on the left side

on a rather high table, the right shoulder turned away from the surgeon, the left arm brought backward from under the body, and the right thigh flexed upon the abdomen. The office-table used is so constructed that by pressing on a pedal the head can be lowered and the hips elevated. In addition to this, it can be rotated from side to side, thus enabling one to view the parts at a great advantage. It is the best all-round table we know of. It is manufactured by the W. D. Allison Company, of Indianapolis. (See Figs. 1, 2, and 3.)

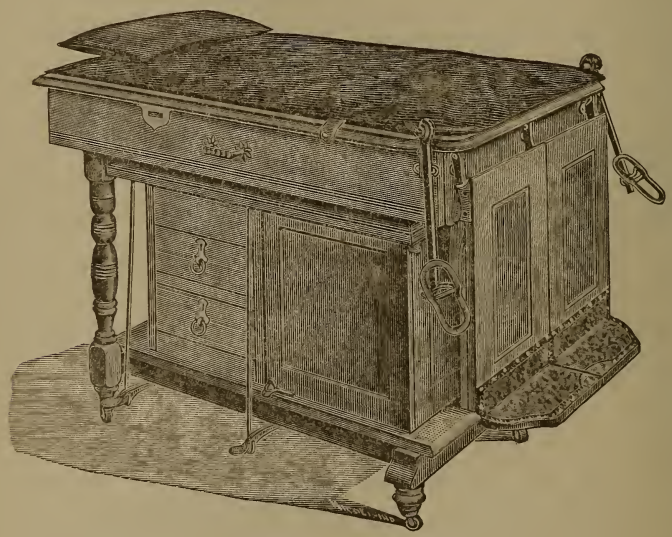

Fig. 1.—Office-Table.

We do not think the Marion Sims position the best one for making an examination high up in the rectum. For this we prefer the genu-pectoral, especially for men. Sometimes we have patients stand in the erect position and strain down. In this way the diseased parts will be brought nearer the anus, thus enabling us to reach an inch or two higher up. Gentleness should always be used when making a rectal examination. By so doing much pain and annoyance can be avoided. Before the finger is introduced into the rectum a careful examination

of the external parts should be made. By separating the buttocks a good view of the anus and surrounding parts can be had. Cracks, fissures, external hemorrhoids, excoriations, and discharges, when present, can be readily detected.

The finger should then be slowly passed around the anal margin to detect any deep-seated or superficial hardness, which may be due to a fistula or abscess formation. Tenderness in

Fig. 2.—Office-Table in Sims's Position.

the neighborhood of the anus can be readily detected in the same way. Eruptions of any kind—eczematous, syphilitic, or otherwise—will also be noticeable. Next, a careful examination of the interior of the rectum should be made. The finger should be anointed with vaselin or some other stiff lubricant. The patient is then requested to bear down gently and by a boring motion the finger is passed forward and upward very slowly and gently. Much depends upon the tact used in making

the examination, for, when it is exceedingly painful, we have known patients to defer an operation, laboring under the mistaken idea that, if a simple examination caused so much pain, the operation would be unbearable. Much valuable information to the educated finger can now be obtained. First, notice the strength of the sphincter. A tight sphincter indicates a fissure, while a weak one is suggestive of malignant or other grave

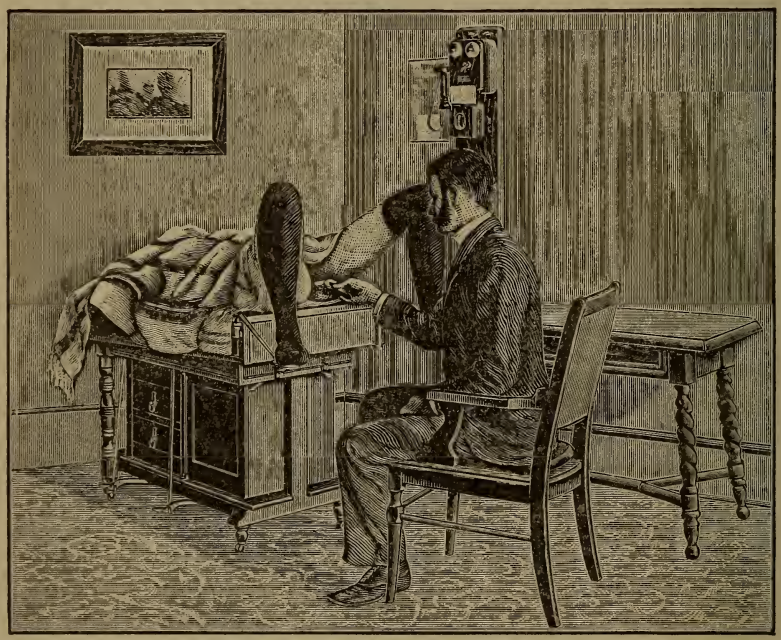

Fig. 3.—Office-Table in Lithotomy Position.

rectal disease. Then, by sweeping the finger around the rectal wall, internal hemorrhoids, internal fistulous orifices, fissures, ulceration, polypi, strictures, and morbid growths can be easily detected. Next, the prostate gland and the uterus must be examined, for when they press on the rectal wall they are liable to induce some pathological condition of the same at any time. If a tumor of any kind should be located, determine if it be

hard or soft and, if possible, remove a small portion for microscopical examination to determine its character; in more than one case a fecal impaction has been mistaken for a cancer of the rectum. On withdrawal, if there be any discharge on the finger, examine it and see whether it is blood, pus, or mucus.

Speculums.

The question of what speculum is best for rectal examinations is not of so much importance as one who does little work in this department of surgery would at first suppose. We use the speculum less and less every year in the preliminary exami-

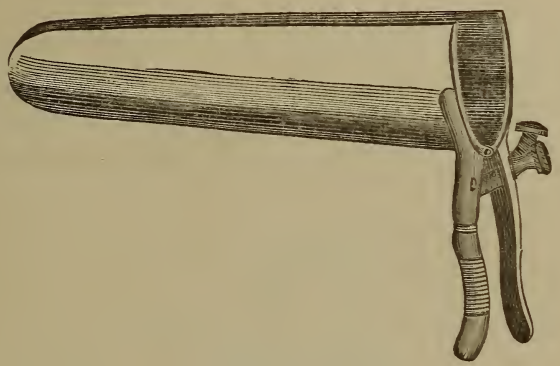

Fig. 4.—Hinged Speculum.

nation, for, in cases where a diagnosis cannot be made after a thorough digital and visual examination of the outer parts when the buttocks have been separated and the anal margin pulled apart, it is difficult to make it with the aid of any of the speculums now in use unless an anesthetic is given. When we have a doubt as regards the diagnosis, we at once insist on a thorough examination under chloroform, that we may determine the exact condition of the parts. In cases where an anesthetic is not given, and it is desirable to use a speculum for the effect or other reasons, we prefer a small, cone-shaped, hinged one (Fig. 4), which we have used for several years with more satisfaction

than any of the others, of which we have a great variety. Next to this we use Sims's wire or Mathews's speculum. (See Figs. 5 and 6.)

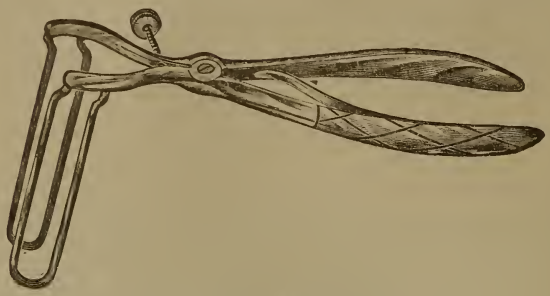

Fig. 5.—Sims's Wire Speculum.

Examination under Anesthesia.

Examinations under an anesthetic are always satisfactory as far as the diagnosis of the local condition is concerned, for under chloroform or ether the irritable sphincter relaxes and a

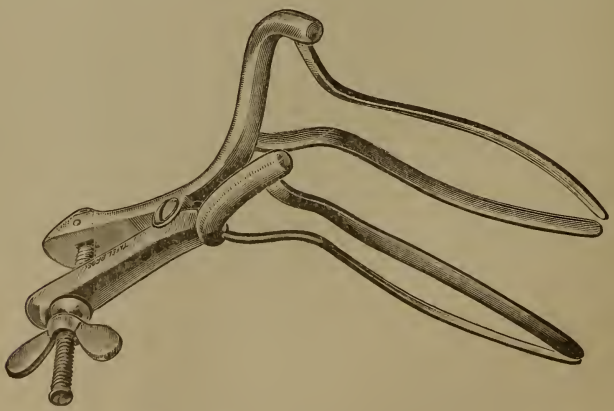

Fig. 6.—Mathews's Rectal Speculum.

complete view can be had of the seat of the disease in cases where pain and spasm of the sphincter would otherwise offer almost insuperable obstacles to a complete exploration of the parts. The sphincter should be thoroughly divulsed; then,

by the aid of the improved speculums now in use and a good light, the lower four or five inches (10 or 12 centimetres) of the rectum can be seen easily, which makes the diagnosis of

Fig. 7.—Esmarch's Chloroform Inhaler.

to-day easy in comparison with the difficulties which had to be overcome in former years. We use Pratt's bivalved speculum (large size) or Cook's trivalved speculum, to the exclusion of

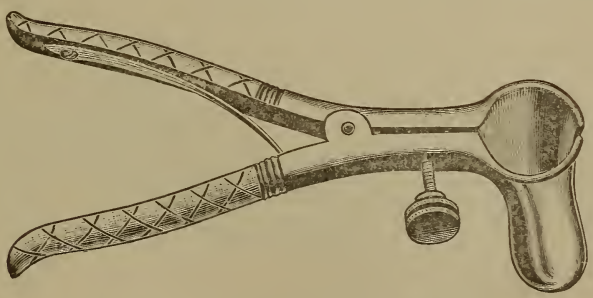

Fig. 8.—Pratt's Bivalved Operating Speculum.

all others, for examinations conducted under chloroform, and for operations where a speculum is indicated. (See Figs. 8 and 9.)

In our office we use an artificial light which consists of an

ordinary incandescent electric light fitted in a reflector similar to those used by throat specialists, attached to a dental bracket

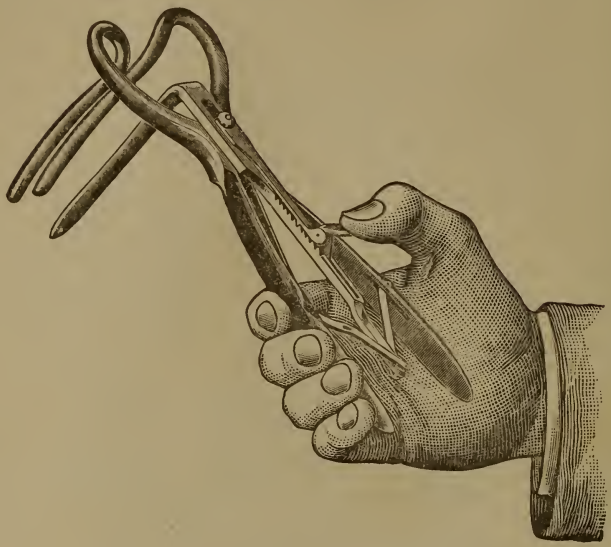

Fig. 9.—Cook's Trivalved Operating Speculum.

in such a way that it can be raised, lowered, or turned at any angle. (See illustration.) I devised it some four years ago,

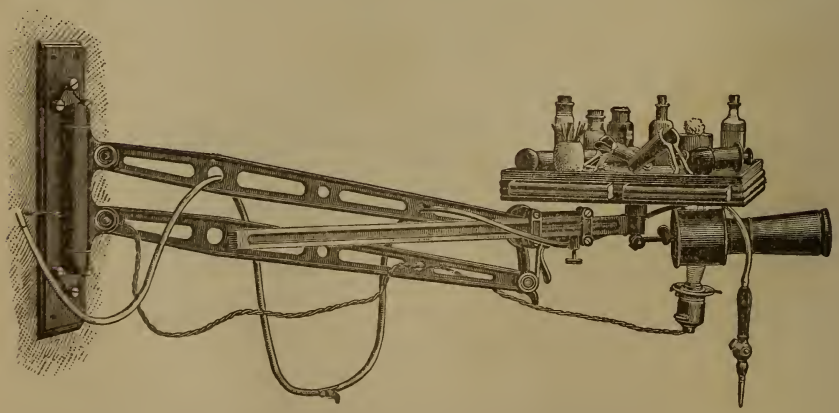

Fig. 10.—Author's Artificial Light and Table Apparatus.

and it has given perfect satisfaction and, in addition to this, does away with the use of an instrument-table. With this

light and the aid of a pair of vulsellum forceps, with which to draw the gut down, a good view can be had of the entire circumference for five inches (12.7 centimetres) or more. When a growth is suspected high up which cannot be diagnosed by other means, the hand and arm may be inserted into the rectum and, by so doing, the diagnosis may be made clear. This is accomplished more easily in the female than in the male. The hand should be small, and then introduced cone-shaped with the greatest caution, for cases have been reported where the rectum has been ruptured in this way, resulting in death. Mr. Allingham, Sr., says that in one case he diagnosed and completely broke up a false membrane of peritoneum which was holding down the bowel as it crossed the brim of the pelvis, and the patient made a complete recovery. The danger from this method of diagnosis is that of rupturing the bowel, owing to the walls' being weak from ulceration. In concluding an examination it is always necessary to press deeply into the left iliac fossa to determine the presence of tenderness or a tumor of any kind.

CHAPTER V.

CONGENITAL MALFORMATIONS OF THE RECTUM AND THE ANUS.

Congenital malformations of the rectum and the anus are of comparatively rare occurrence; still, it is essential that all medical men should be familiar with the different varieties and the treatment required. While some malformations can be relieved easily, others cannot be helped by the surgeon. Rectal malformations result from arrested fetal development of the rectum and anus in early fetal life. We shall not have the space to give in detail the development of the lower bowel in this volume, a full detail of which can be found in systematic works on embryology. There are many varieties of malformations; and nearly all authors vary some in their classification.

We are of the opinion, however, that the most simple and practical classification is that of Holmes, with slight modifications, as given by Cooper and Edwards, which is as follows*:—

Imperforate Anus.

"Congenital narrowing of the anus without complete occlusion, but sometimes accompanied by a fecal fistula.

"Closure of the anus by membranous tissue.

"Entire absence of the anus, the rectum ending in a blind pouch at a varying distance from the perineum.

"Imperforate anus with fecal fistula opening either into the vagina, male bladder, urethra, or upon the surface of the body."

* Diseases of Rectum and Anus, by Cooper and Edwards, page 44.

Congenital Narrowing of the Anus without Complete Occlusion.

Narrowing of the anus or rectum without complete occlusion comprises the least serious form of the preceding classification. The anal aperture is at times preternaturally small, either in consequence of a contraction of the lower end of the rectum or from the skin's extending over the border of the anal margin. The outlet may be sufficiently large to let the

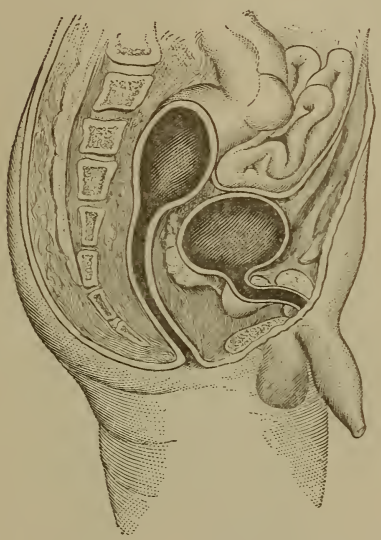

Fig. 11.—Narrowing of the Anus without Complete Occlusion.

meconium drain away, or so small that an escape of the excrementitious matter is impossible. (See Fig. 11.)

The symptoms, when pronounced, will be vomiting and abdominal distension; when only slight, constipation and a difficulty in voiding the feces only will be noticed. The diagnosis is usually easy, for the contraction is near the anus and can be readily detected with the finger, or it can be seen when due to a fold of skin extending across the anus.

Treatment.—The treatment consists in dividing the ring or skin with a bistoury on the dorsal surface, after which the parts

should be thoroughly cleansed and antiseptic dressings applied. The finger or a soft-rubber bougie should be inserted into the bowel daily, covered with balsam of Peru, to keep the opening well dilated and the wound in a healthy condition. Any fistulous openings into the vagina generally close up after the outlet has been made sufficiently large to allow the excrementitious matters a free exit.

Closure of Anus by Membranous Tissue.

The second variety of imperforate anus also constitutes one of the simpler forms. The anus may be well formed and the

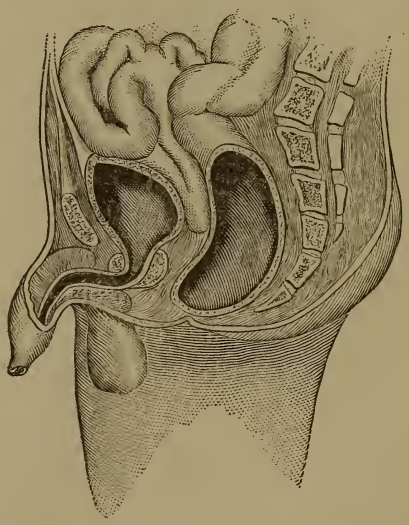

Fig. 12.—Closure of the Anus by Membranous Tissue.

bowel continuous, but the meconium is retained by a membranous partition (see Fig. 12) which stretches across the rectum above the anus. This membrane may vary in thickness, but is usually thin. The diagnosis is made by digital examination or by the aid of a probe; from the retention of the meconium and the bulging of the bowel, it is clearly visible when the child cries. Spontaneous rupture has been known to occur, thus affording an exit to retained matters.

Treatment.—Something should be done at once or the occlusion may result in increasing abdominal distension, vomiting of the meconium, collapse, and death. A free incision should be made through the centre of the membrane, which will be followed by a discharge of the bowel-contents, affording relief at once. If the finger is inserted into the anus daily, tampons to separate the anal walls can be discarded. Sphincteric power is usually well developed in these cases; consequently patients have little difficulty in retaining the feces after the operation. In cases where the end of the rectum does not extend so far down as the anus, it should be drawn down and stitched to the anal margin.

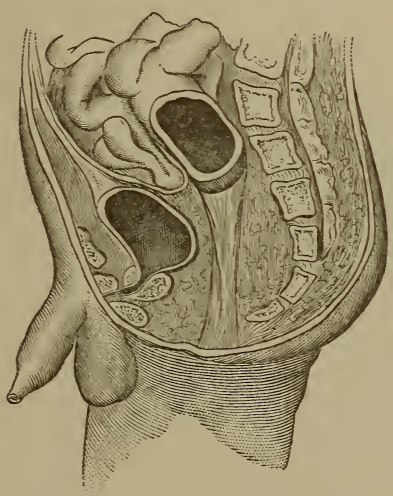

Fig. 13.—Imperforate Anus, the Rectum Terminating Far Above in a Blind Pouch.

Entire Absence of Anus.

In this class one may expect to find some of the most difficult cases of congenital malformation, though some are comparatively simple. Instead of a normal anus, the tissues extend across the anus from one side to the other, and the rectum may terminate quite a distance above the normal site of the anus. (See Fig. 13.) The intervening space may be made up of connective tissue, while a circular elevation or depression marks

the natural site of the anus. In many of these cases the pelvic measurements will be considerably reduced. The diagnosis is made by pressing the abdominal contents down with one hand, while palpation is being made to the perineum with the other to ascertain if the distended pouch can be located or any impulse felt. If the perineum and the pouch are more than an inch (2.54 centimetres) from each other, no impulse can be felt; while if it be less the impulse can usually be detected. In females an examination per vagina will at times be of material service in locating the pouch. If symptoms are not urgent, one is justified in delaying the operation, to see if the sac will not become so distended that its exact location can be determined.

Treatment.—When the pouch has been located, an incision should be made in the median line from the centre of the perineum to the tip of the coccyx, and all tissues dissected down until the tense pouch is reached, opened, brought down, and the edges sutured to the walls of the incision somewhat similar to the operation for inguinal colotomy, being careful that the edges of the mucous membrane and skin are carefully united. Then cleanse the parts thoroughly with some antiseptic solution and put on dry antiseptic dressings, which should be removed daily and a bougie inserted and retained for some time, that too much contraction may not follow. If the pouch is situated high up, or if its location cannot be determined, the operator should so state the circumstances to the parents, and with their consent at once perform left inguinal colotomy, being careful to make a good spur and to see that the skin is well sutured to the mucous membrane so that a prolapsus will not occur. It is well to remember that, in children, the sigmoid may be located on the right side. This anatomical arrangement may be the cause of some difficulty in locating the gut.

Imperforate Anus with Fecal Fistula.

In this class the anus is absent, but a communication exists between the rectum and the vagina in the female (see

Fig. 14), the urethra or bladder in the male (see Fig. 15), or between the bowel and the surface of the body at some point near the anal region.

FECAL FISTULA TERMINATING IN THE VAGINA.

When the fecal fistula terminates in the vagina the opening will be larger than when it terminates in the urethra and will be found in the posterior or lateral wall; the exit in such a case is frequently so large that the meconium and contents

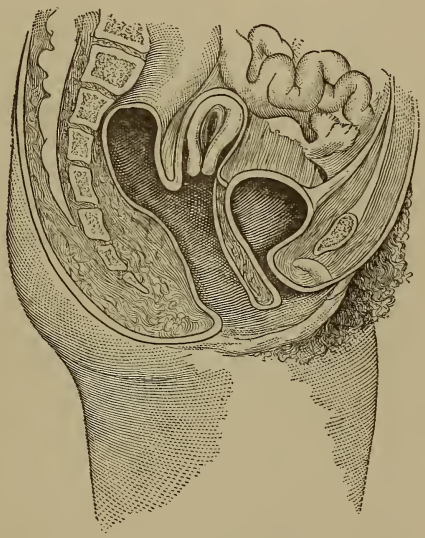

Fig. 14.—Imperforate Anus, the Rectum Opening into the Vagina.

of the bowel can be discharged and distension is prevented. Women have been known to live to an advanced age with this malformation without being conscious of any abnormality. As a rule, however, they suffer very much from pain, ulceration, and excoriations of the parts.

Treatment.—The treatment is comparatively simple. A probe or groove director is passed through the recto-vaginal aperture to a point in the perineum where it is intended to make the anus; it is then cut down upon. The rectum should

then be brought down and sutured and the opening in the vagina closed. Some encourage the laying open of all the tissue from the fistula to the natural anal position and let healing take place by granulation. Others pare and suture the edges of the opening in the pouch to those of the skin. It seems to us that, so long as the patient does not suffer from distension and can control the bowels satisfactorily, operative interference is uncalled for.

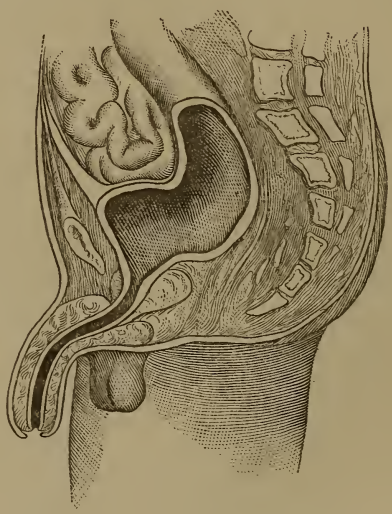

Fig. 15.—Imperforate Anus, the Rectum Terminating in the Bladder.

FECAL FISTULA TERMINATING IN THE URETHRA.

Imperforate anus with the rectum opening into the bladder or urethra is a far more serious condition. When it opens into the urethra, the opening is usually very small. (See Fig. 16.) Naturally, this occurs more frequently in the male than in the female, on account of the length and the narrowness of the urethra. The opening is always very small; the meconium is unable to pass out, and at an early period distension is noticeable. The watery portion of the rectal contents oozes out at first, but as the feces acquire consistency obstruction will take place, and the life of the patient becomes endan-

gered. In an exceptional case, recorded by Mr. Page,* the patient, a man 54 years old, had throughout his life voided his feces and urine by the urethra. Soon after birth the imperforate anus was discovered, and an attempt was made to establish an opening in the natural position, which did not prove a success. At the age of 10 obstruction occurred, and temporary relief was afforded by incising the urethra in front of the scrotum. Through this opening he, with difficulty, dis-

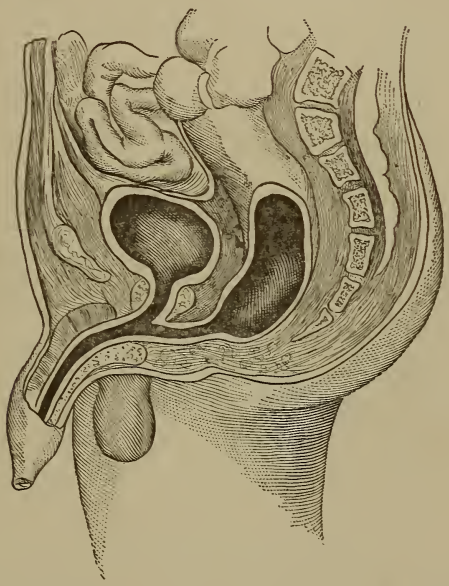

Fig. 16.—Imperforate Anus, the Rectum Terminating in the Urethra.

charged his feces and urine with the assistance of aperient medicines for some time. Contraction of the fistula and the blocking of the urethra finally led him to seek relief; but he refused assistance further than an enlargement of the fistula, although Mr. Page found that a probe could be passed through the anal aperture. The urethra was accordingly split up and the mucous membrane sutured to the skin, thus converting the fistula into an opening of fair size. Four months afterward the patient

* British Medical Journal, vol. ii, pp. 875–888.

reported that he was comfortable and that his bowels acted regularly without medicine. Many other interesting cases have been reported where the bowel-contents have been discharged by the urethra for a greater or less period of time, causing little annoyance in some, while others suffered greatly, living for months until obstruction occurred and death ensued.

Treatment.—When this form of malformation exists an operation for obtaining an exit at the natural site should not be delayed, owing to the serious symptoms which accompany distension. The operation is performed by cutting down through

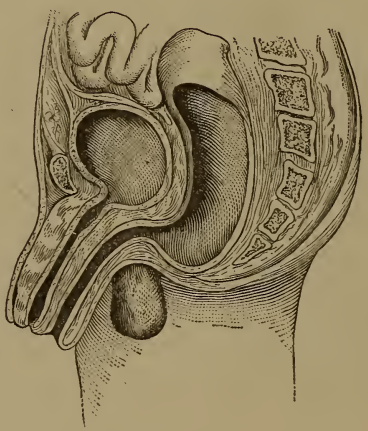

Fig. 17.—Imperforate Anus, the Rectum Opening on the Surface by Means of a Fistulous Sinus through the Penis.

the natural site of the anus until the pouch is reached, opened and sutured to the skin, and the fistula closed. In some cases the rectum opens into the bladder and, in such cases, the meconium and urine will be mixed and voided through the urethra. The child may survive for a short time, but a fatal termination is almost certain unless something is done, although cases are on record where adults have continued to discharge their feces through the urethra with comparatively little inconvenience. There is very little to be done from an operative stand-point, further than to keep the urethra dilated sufficiently that the contents may escape, unless we do a colotomy.

FECAL FISTULA OPENING UPON SURFACE OF BODY.

Imperforate anus with fecal fistula opening upon the surface of the body presents a variety of forms, the openings being differently situated; there may be one or a number of them; the most common site is some point in the perineum. If the opening is small and obstruction has taken place, make an incision with a probe-pointed bistoury, enlarging the opening in the median line or as near as possible. Then, if the edges of the rectum can be brought down to the margin of the wound and sutured, a fine result may be looked for. The opening at times may be located in the scrotum, the base of the penis, the gluteal, or lumbar, or sacral regions.

Treatment.—The treatment differs according to location. The principal feature, however, is to establish the outlet at or as near to the natural seat of the anus as can be done. If possible, unite the edges of the skin and mucous membrane. Not infrequently an operation is impossible; then the only thing to be done is to enlarge the fistula to such a degree that the contents may be discharged with as little discomfort to the patient as possible. While operative interference does not meet with as much success as we could desire, yet much comfort can be rendered the patient and life made at least worth living.

Imperforate Rectum.

It now remains to consider the cases belonging to this class,—viz., those in which the rectum is imperforate, but the anus is in the natural position. These, according to the classification adopted, may be divided into two classes. In the first of these the obstruction in the rectum is membranous in character. (See Fig. 18.) In the second there is a total deficiency or an extensive obliteration of the rectum. The attention of the surgeon is not called to these cases, as a rule, until the symptoms have become urgent, from the fact that the anus is in the normal position. The attendants naturally look elsewhere for a cause of the symptoms until distension occurs. I have myself

seen a case of this kind in hospital practice, due to a membranous septum extending completely across the rectum about one inch (2.54 centimetres) above the anus, which was readily detected by the introduction of the finger into the anus. I at once incised the membrane, washed out the bowel, and left a small rubber bougie to be passed daily for a few weeks. The child completely recoverd. When the obstruction is due to a membrane, this treatment should be carried out under antiseptic precaution and success will follow. In the second class, where

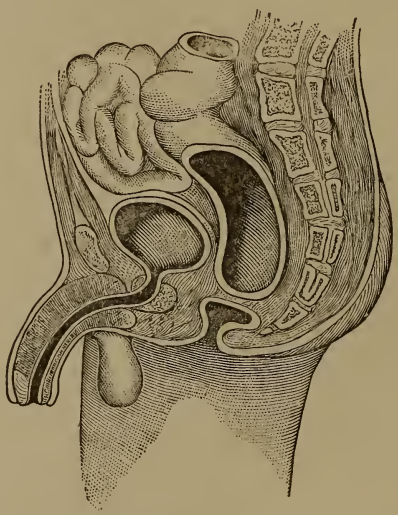

Fig. 18.—Imperforate Rectum, the Anus Natural, but Rectum Separated from it by a Membranous Partition.

the rectal pouch may be situated too high to get any impulse, the child's life is in great danger.

Treatment.—The operative procedures at our command are two; first, by dissecting up to the gut from the perineum; second, performing colotomy at once, for the child must have immediate relief. If, after a thorough examination, the pouch seem to be within reach, the former may be tried; but if there is reason to believe that the pouch is so high up that it cannot be reached or that the rectum is abnormally developed, a

colotomy should be resorted to at once. When the artificial anus has been once established, if the indications should warrant it, an attempt can be made to restore the anus at the normal site. Dr. Byrd, of St. Louis, operated on a case of this kind by introducing a sound through the artificial anus and pushing the pouch downward in order to more easily reach it from below. He made an incision about two inches (5 centimetres) deep upward from the anus and back to the coccyx large enough to permit the passage of the index finger. The sound was then carried downward until within one-eighth of an inch (3 millimetres) of the finger passed from below. When it could pass no farther with ease, it was forced through the intervening tissues and out the anus. In the after-treatment much ingenuity was displayed in trying to get the mucous membrane toward the opening, but the subsequent history was not given. It was thought that the artificial anus would close without further operative procedures than the wearing of a well-fitting pad. Cases have been reported where the opening in the groin was closed with success, while others were not so fortunate.

In bringing this chapter to a close, we desire to mention that the death-rate in cases of malformation is high, even in simple cases where only a puncture has been made, though not so high as where, owing to the liability to constriction, an attempt has been made to establish an artificial anus at the natural site.

The following table is taken from Cripps, and shows the mortality in one hundred cases operated on by him:—

1. Colon opened in the groin,	16, died	11
2. " " " " "	3, "	2
3. Puncture,	17, "	14
4. Coccyx resected,	8, "	5
5. Perineal incision or dissection,	39, "	14
6. Communication between rectum and vagina,	14, "	1
7. Miscellaneous,	3, "	3
Total,	100 "	50

This report shows a death-rate of 50 per cent. This certainly is not encouraging, yet, on the other hand, probably all would have died if an operation had not been performed.

In this chapter we have not attempted to treat of any varieties of malformations except those of the most frequent occurrence. Those desiring a more lengthy description of the varieties and treatment of malformation of the rectum and anus we respectfully refer to the excellent works of Bodenhamer, Curling, Cripps, and Ball.

CHAPTER VI.

PROLAPSE OF THE RECTUM.

PROLAPSE of the rectum has been very improperly denominated prolapsus ani by many high in authority. Since the anus is merely an aperture with a fixed point, it cannot therefore be prolapsed. It may be everted to a certain extent, but it cannot be prolapsed. Prolapsus of the rectum signifies the descent of a portion of the bowel through the anus, which, in the normal

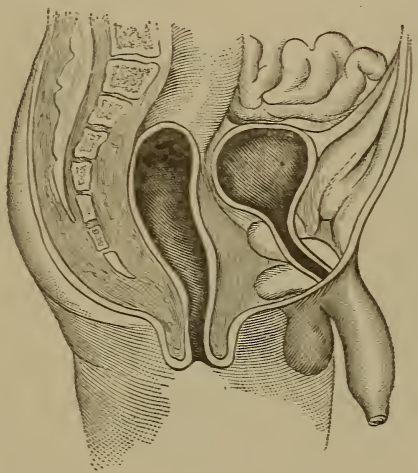

Fig. 19.—Diagrammatic Drawing showing Prolapse of the Rectum.

state, is within and above that aperture, the protrusion consisting of mucous membrane, either alone or combined with other coats of the rectum. Between these extremes there are many intermediate varieties. Again, we may have the upper portion of the rectum invaginated into the lower. From a practical standpoint we have three varieties of prolapsus of the rectum, viz.:—

1. Prolapse of the mucous membrane alone.
2. Prolapse of the rectal coats, and, when extensive, the peritoneum will be pulled down as well.
3. Prolapse of the upper portion of the rectum into the lower, called invagination or intussusception.

Prolapsus of the Mucous Membrane.

This we have found to be the most frequent variety. (See Fig. 20.) During normal defecation the narrow ring of mucous membrane protrudes from the anus, which returns when the act is completed. This is quite noticeable among some animals, as the horse. It occurs more frequently among children than adults.

Causes.—The acute cases are found in children, and are usually produced by straining at stool, as a result of constipation

Fig. 20.—Prolapse of the Mucous Membrane.

or diarrhea, especially in those of a tubercular diathesis. Phimosis and stone in the bladder not infrequently cause this condition, as a result of the constant straining during micturition. In children, owing to the straightness of the sacrum, prolapsus is more liable to occur. Relaxation of muscles and of other structures may also bring about this condition. Prolonged or violent coughing or screaming may also produce prolapsus; paralysis and ulceration of the sphincter may cause it; polypi, internal hemorrhoids, or other foreign bodies in the rectum

which produce straining may be classed as causes. The prolapsus may be immediate, as a result of coughing, vomiting, etc., or it may come on gradually. The more often the bowel comes down, the more the parts become stretched and relaxed, thus favoring a repetition of the prolapsus.

Symptoms.—In recent and mild cases the protruded portion consists of a ring of mucous membrane, which comes down about one inch (2.54 centimetres) when the bowels move, and returns spontaneously, or by the patient's assistance, after the act is completed. At times there is much pain and the protruded mass is red and bloody. This is especially so if there be any ulceration. Otherwise there will be no pain, and the tumor will be of a deep-red color and marked by crescentic folds. When considerable time has elapsed after the protrusion first occurred, it may become congested and difficult to return. In cases of long standing the protruded mass is easily reducible on account of the weakened sphincter, but will not remain long at a time. Prolapse may be distinguished from a polypus by its softer feeling, uniform, smooth, appearance, and the absence of a pedicle; but it is not always so easy to differentiate between protruded internal hemorrhoids and prolapsus. A careful examination with a practiced eye and touch will allay any doubt, however. In prolapse we have a tumor that involves the entire circumference of the bowel and has a soft, velvety feel. In other respects it resembles the normal mucous membrane and has a slit in the centre of the protruded portion; while the hemorrhoidal tumors, hard or smooth and lubricated, are always separate and distinct, have a definite feel, and are more easily movable.

Prolapse of the Rectal Coats.

This form of prolapsus (see Fig. 21) does not occur nearly so frequently as the first variety. It differs from it in that the protruded mass is composed of all the coats of the rectum and the peritoneum as well, when it is extensive. When the prolapse extends down more than two and one-half inches (6.35 centi-

metres) it is well to look out for folds of peritoneum ; for within there may be coils of the small intestine. This variety comes on more gradually than the other and occurs less frequently in children than in adults. The protrusion is pyriform in shape and at the lower extremity a slit-like opening may be seen, surrounded by folds of the mucous membrane and portions of the muscular coat. In this variety there is no invagination. This can be determined by following up the tumor (see Plate IV) with the finger and it will be found to be continuous with the rectal coat. When invagination is present a deep sulcus can be detected between the annular ring and the protruding mass.

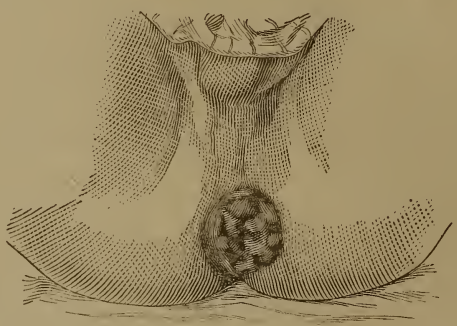

Fig. 21.—Partial Prolapse of Rectal Coats.

This variety is the least likely to be confounded with hemorrhoids or polypi. A complete examination will at once reveal the condition present. Complete prolapse may assume very great proportions, for in rare instances the greater portion or the entire colon may be protruded through the anus.*

Symptoms.—The symptoms are similar to those of the first variety, but are of a more aggravated form; the pain is not severe, as the lower portion of the mucous membrane has a low state of sensibility. Mucus is almost constantly discharged, and it is mixed with pus when ulceration is present. The most marked symptom, however, is the incontinence of feces, which is present, to a greater or less degree, in all severe cases. Compli-

* Ball's Diseases of Rectum and Anus, p. 195.

PLATE IV.-TYPICAL CASE OF PROCIDENTIA RECTI.

Bunk & McFetridge Co. Lith. Phila.

cations of complete prolapse are to be watched, the chief danger being due to the envelopment of the peritoneal coat. When this coat comes down, it is liable to contain coils of the small intestine or one of the ovaries. They are to be looked for in the anterior half of the prolapse. As a rule, when a loop of the small intestine is included, it can be detected by feeling it slip on pressure. When present this condition can be properly designated *hernia of the rectum*, and noted as such. According to Allingham, when hernia is present, the opening of the gut is always directed toward the sacrum, and, when reduced, it immediately returns to its normal position. Another complication to be looked for is the spontaneous rupture of the rectal wall, for several such cases are on record.

Prolapse of the Upper Portion of the Rectum into the Lower.

In treating this variety Kelsey substitutes the term *invagination* for *prolapse*, which he thinks more aptly expresses the condition. We prefer, however, to speak of it as a prolapse and differentiate between it and the other varieties referred to. In the first and second varieties the lower portion of the rectum slips down through the anus, while in this form the lower portion of the rectum retains its normal position and the upper portion is telescoped through it. The lower portion of the bowel may come down in the upper part and remain there, or in extreme cases protrude from the anus a great distance. The diagnosis can be made by passing the finger around the invaginated mass within the bowel. When the protrusion is small and of recent date, it can be replaced easily, though it is likely to appear again when the bowel acts. In cases of extreme protrusion replacement becomes difficult and painful; but after it has existed for a time the anus becomes patulent and the sphincter loses its elasticity so much that every time the bowels move or the patient makes the slightest exertion the mass protrudes, thus rendering life almost unbearable.

Prognosis.—In giving a prognosis in any case of prolapse it is well to bear in mind that, when the mucous membrane alone is involved, a spontaneous cure is frequently effected. Simple remedies, however, often assist nature to a speedy cure. In severe cases no such happy results may be looked for, especially in the aged. In old cases, where thickening has taken place, nothing short of a surgical procedure will effect a cure, and this may have to be repeated. So it is not well to commit one's self as to the time it will require to effect a cure.

Treatment.—It matters not with which variety you are dealing; an effort must be made to return the mass. This usually can be accomplished without an anesthetic, in the following manner: Place the patient, if a child, across the mother's knee, face down; if an adult, he may be placed in a similar position on a table or bed with the head lowered. First clean all the protruded mass and place a soft, clean, well-oiled cloth over it; then make gentle pressure over the whole mass of the tumor for several minutes, endeavoring to reduce the size of the mass by pressing out any fluid in the rectal coats. Next, endeavor to return the more central part of the mass first, since it was the last part to come down. The reduction can be accomplished in many cases with very little difficulty. To prevent the bowel's coming down immediately after the reduction, apply pressure for some time to the anus; for this we prefer cotton-wool, a pad of gauze, or a soft sponge supported by a T-bandage. In case the mass has become swollen and painful, chloroform, which will materially assist in the reduction of the same, may be administered. After the reduction the patient should rest in bed with the nates drawn together tightly. We well remember seeing a number of cases treated by Dr. Seneca D. Powel, while we were house-surgeon in the New York Post-Graduate Medical School and Hospital. The following is his plan of treatment: After pulling the two buttocks together, he places strong straps of adhesive plaster, which are to be worn all the time, from one to the other. After defecation the parts are cleaned and new

straps substituted. We have never seen this plan fail when used by him. In our own practice we have found this procedure to be of great assistance in many cases. The plaster proves beneficial from the fact that it supports the sphincter during the intervals of defecation and diminishes lateral traction while in the squatting position. In cases where it is not advisable to use the straps or other support, the patient should be required to defecate in the recumbent position, using a bed-pan, or else he should occupy the erect posture. The bowel should be trained to act just before bed-time, thus enabling the patient to lie down immediately thereafter. In all cases of prolapsus an examination should be made to ascertain if there is any other local pathological condition, such as hemorrhoids or polypi, that would be likely to keep up an irritation or produce straining. If there is it must be corrected, else the treatment inaugurated for the cure of the prolapse will prove to be of no avail. The treatment is:—

1. Palliative. 2. Radical.

In children the palliative will usually prove satisfactory. The first thing to do is to look after the general health, and if a tonic is indicated it should be prescribed at once. Next, direct attention to the bowel and see that the child has at least one free action daily. This can be done by instructing the little one to go to the closet at the same hour every day, and to devote the whole time there to emptying the bowel. The palliative treatment is, to a certain extent, routine, and consists principally in the local application of astringents, or the injection of the same into the prolapsed gut, which should be immediately returned. The daily injection of cold water into the bowel just previous to the patient's going to stool acts admirably. The astringents recommended for the cure of prolapsus are many in number. Some of those that have stood the test of time are: tincture of iron, tannin, alum, sulphate of and chloride of zinc, etc. We have been in the habit of using a

solution composed of pulverized alum, two drachms to the pint of water, with which the protruded mass was washed off before it was returned within the anus, and have been much pleased with the results. A decoction of black-oak bark acts equally well. When mild remedies fail to give relief, Allingham* recommends the application of nitric acid. On the other hand, Mathews† deprecates its use in strong terms, and reports a case in which a bad result followed its use. In our experience the application of nitric acid has resulted in a cure in nearly every case where we have used it. It is never employed except in the treatment of prolapsus in children, when it is necessary to grease the surrounding parts with vaselin to protect them, and,

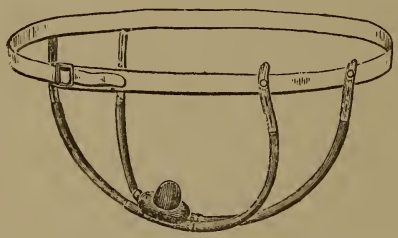

Fig. 22.—Prolapsus Ani Truss.

Fig. 23.—Rectal Plug.

further, to neutralize any excess of the acid with common soda. Kelsey‡ claims to be the first to cure prolapsus by the injection of carbolic acid into the protruded mass, and in the same manner as for the cure of hemorrhoids. The subcutaneous injection of ergotine into the perineum and immediate neighborhood of the anus has been highly recommended. We have had no experience with the injection method; consequently, we can neither decry nor commend it. In concluding these remarks on the palliative treatment, we desire to recommend rectal plugs (see figures), which are made in various sizes, to keep the bowel from protruding. The rectal plug consists of an oval knob of vulcanite with a slender shank, around which the sphincter con-

* Diseases of the Rectum, p. 181. † Mathews, p. 480. ‡ Kelsey, p. 218.

tracts when it is introduced into the anus. We are indebted to Mr. Ball, of Dublin, for this ingenious device, which he has found to be of great service. It was invented by one of his patients. (See Fig. 23.)

Operative Treatment.—When palliative measures have failed, it will be time to direct attention to operative procedure for the cure of this disease. It is pleasing to know that in this way relief can be given in nearly all cases. We shall not attempt to describe all the operations devised for the cure of prolapse, but will give briefly those that appear preferable. The cure of this condition involves several objects, viz.:—

1. To cause adhesion of the coats of the rectum.

2. To remove redundant tissue.

3. To reduce the size of the anal orifice.

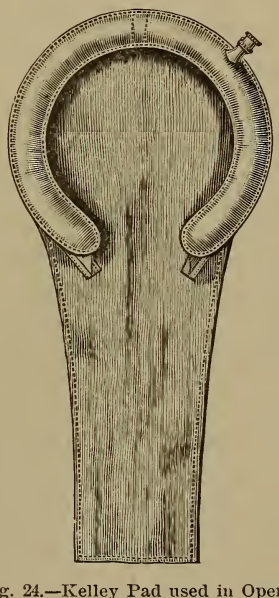

Fig. 24.—Kelley Pad used in Operations about the Rectum.

We place at the head of operative procedures the actual cautery, which has been brought prominently before the profession by one of our American surgeons, Van Buren.* It has been sanctioned by Cripps and many other authors on rectal diseases, and is used as follows: The bowel having been thoroughly opened on the previous day, place the patient on the table in the Sims position, anesthetize him, and reduce the prolapse; introduce a speculum which will separate the parts amply, and with the Paquelin thermo-cautery (narrow point) make a number of parallel lines an inch apart, beginning three inches (7.62 centimetres) above and terminating at the outer margin of the anus. (See Case II.) These lines are to be made

* Van Buren, Diseases of the Rectum and Anus, p. 81. D. Appleton & Co.

deeper and nearer together, if the severity of the case demand it. In this way we get the full effect of the cautery in producing rectal cicatrices. We have followed this plan in treating many cases of prolapse, some of which were very severe, and we have found it eminently satisfactory; though, in a few cases, we had to repeat it two or three times, but finally obtained a cure. In mild or severe forms of prolapse, elliptical portions of the mucous membrane may be removed with the Gant clamp, scissors, and cautery, or the edges sutured together with carbolized catgut before the clamp is removed. Removal of the protruded mass may be done with the clamp and cautery and elastic ligature *écraseur*, or by the knife, the last being preferable in the larger proportion of cases where removal of the entire circumference of the bowel is desirable. Such men as Allingham* and Cripps do not look upon excision with much favor. Some objections which suggest themselves are the danger of strictures following the operation, as well as the danger of wounding the small intestine during the operation, should a hernia be present. While we cannot commend the operation of excision as one to be resorted to in the majority of cases of prolapse, we must admit that it is certainly of great value in some cases, and deserves to be mentioned in this connection. Believing the prolapsed condition to be due to an abnormally lengthened mesentery in severe cases, Allingham, Jr., has devised an operation for its cure, which is done by incising the abdominal wall on the left side about the outer third of Poupart's ligament; the rectum is then seized and drawn up, the mesentery sutured to the abdominal wall, and the wound closed. The object to be hoped for is to produce a firm adhesion so that the upper part of the rectum will be prevented from being intussusceptied into the lower. We had the pleasure of witnessing this operation by Dr. Allingham while in London, and desire to say that we were favorably impressed with it, though, as yet, we have not had an opportunity of performing it. Dr. F. Lang, of

* Allingham on Diseases of the Rectum, p. 187.

New York, devised an operation whereby he hopes to cure the prolapse by reduction in the calibre of the bowel as well as by the narrowing of the muscular ring. Verneuil, of Paris, endeavors to overcome the prolapsed condition by raising the bowel and attaching it in the region of the coccyx. Both of these operations have their good points, but space forbids their further discussion in this work.

ILLUSTRATIVE CASES.

Case I.—Prolapsus due to Summer Diarrhea.

A little girl, 2 years old, was brought to the dispensary to be treated for piles. Her mother said that the child had been suffering from summer complaint for three weeks and that the stools were frequent and caused much pain and straining; while on the chamber half an hour before, the piles came down. I placed the child across my knees, flexed the limbs, and a tumor the size of a hen's egg (Fig. 20) presented itself just without the anus. The tumor was soft, smooth, and globular in shape, with a slit in the centre, and was of equal size on each side of the anus. The case proved to be a typical case of prolapse of the mucous membrane. The sphincter was relaxed, and every time the tumor was returned within the bowel it would immediately re-appear.

Treatment.—Chloroform was administered and the tumor reduced; then the cautery-point was introduced up the bowel for two inches (5.08 centimetres) and then brought down and outward. This was done a number of times, until there were a number of parallel lines about half an inch (1.3 centimetres) apart. A piece of gauze smeared over with vaselin was placed in the bowel to keep the rectal walls separated. The buttocks were then strapped tightly together with adhesive plaster to support the anus during straining. An opiate was given to tie up the bowels and the child sent home. Two days afterward the straps were removed and a good action followed; then they were replaced and kept on for four weeks, when she was discharged. Three months later I saw her again. She had been perfectly well ever since the operation.

Case II.—Extensive Prolapsus of all the Rectal Coats.

Dr. Pollard, of Braymer, Mo., came to me to have an operation performed for prolapsus of the rectum and gave the following history: Age 38; country practitioner; general health good except that he suffered more or less from constipation and headache. He seldom had actions more than twice a week, and then they were attended with violent strain-

ing and protrusion of the bowel. Sometimes only the mucous membrane would be everted; at other times all of the rectal coats would come down for several inches, and, when not promptly returned, would swell up and were very difficult to reduce.

Treatment.—He was anesthetized and the cautery applied deeply into the mucous membrane after Van Buren's method. It was then pressed deep down into the external sphincter in three different places, at equal distances apart, to insure contraction. The bowels were tied up for a week and the diet restricted to milk and soft-boiled eggs. On the seventh day, after taking a Seidlitz powder, he had a copious movement; the bed-pan was used and he remained in a recumbent position. The rectum was irrigated and balsam of Peru applied to the mucous membrane. Ten days from the time he entered the hospital he returned home and, one week later, he was performing his usual duties. He called at my office a few months ago and said that the rectum had not troubled him in the least since the operation, more than two years ago.

Case III.—Extensive Prolapsus.

A lady came to be treated for extensive prolapsus. She had been operated on twice before by Van Buren's method.

Operation.—It was decided to excise the redundant tissue, which was done after the following manner: An incision was made around the anus at the muco-cutaneous junction, and the mucous membrane dissected up for two inches (5.08 centimetres). It was then pulled down, cut off, and the upper portion brought down and attached to the skin by catgut sutures. Antiseptic dressings were applied, and union was complete within ten days without a drop of pus. At this time she was discharged with instructions to keep her bowels open and to report at my office if the bowel came down again. One year afterward I met her and she informed me that she was well and that she had given birth to a fine boy since the operation.

Case IV.—Dwarfed Child Suffering from Prolapsus.

Eighteen months ago I was called to see a dwarfed child who had suffered from the time he was 6 weeks old with obstinate constipation and extensive prolapse of the rectal coats, which the father thought were the cause of the arrested development. He is 14 years old, weighs 38 pounds, and measures thirty-two inches (81.28 centimetres) in height. (See Fig. 25.) During the past eleven years he did not gain one ounce in weight nor one inch (2.54 centimetres) in height. Another interesting feature in this case is that he has an angioma between the thumb and forefinger of the right hand. This the family physician lanced for an

abscess and came near losing the patient from hemorrhage. This lad was treated by the cautery method and the prolapsus was cured. I cite this case merely because it is a unique one.

Six months after the above notes were made I saw the child again,

Fig. 25.—Dwarfed Child Suffering from Extensive Prolapse of the Rectum.

and decided to give the desiccated thyroid gland a trial. The improvement in his general appearance since that time has been marked, indeed. His father tells me that he has grown five inches (12.7 centimetres) in height. His countenance has changed entirely, his speech has improved, and he shows considerable mental development. I have, through the father's kindness, a late picture of the boy which I scarcely recognized at first sight. The dose given in this case was two grains every four to six hours.

CHAPTER VII.

POLYPI AND OTHER NON-MALIGNANT GROWTHS.

Non-malignant growths found in the rectum will prove, in a large majority of cases, to be polypi of some variety. They may be single or multiple; they are found more frequently in childhood than in adult life. Their usual site is at the upper portion of the internal sphincter. Polypi have been mistaken for hemorrhoidal tumors in not a few instances. This mistake will not occur, however, when a careful examination is made; the polypus can be distinguished by its pyriform shape, long pedicle, florid-red color, and soft, delicate, elastic feel. For a thorough and extensive classification of non-malignant growths we would respectfully refer the reader to Leichenstern's classification,* which we think an admirable one. It is not our purpose to enter deeply into this subject, but to refer to the more common varieties of polypi which one might be expected to treat in the practice of rectal surgery. Polypi differ much both in appearance and feeling. This is accounted for by the different tissues entering into their formation. If they are composed of glandular substance they are soft; while, on the other hand, if they are composed of fibrous tissue they are firm. Again, they may vary in size from that of a pea to that of a small lemon. In nearly all cases they will prove to be either fibrous or adenoid in character, for these two varieties constitute by far the larger percentage of rectal polypi. The pedicle of a polypus may vary in length from one to three inches (2.54 to 7.6 centimetres). We have seen one protrude two inches (5 centimetres) below the anus. The pedicle is composed of mucous membrane; and in some cases in the submucous tissues on the interior of the pedicle are to be found the vessels which give the blood-supply to the base of the tumor.

* Ziemssen's Cyclopedia, vol. vii, p. 634.

Adenoid, or Soft, Polypi.

This variety is not uncommon. Soft polypi (Fig. 26) form generally in early life, and appear to be made up of an exaggerated development of columnar epithelium; in other words, the mass is made up of an enlargement of the follicles and the tissues of the normal mucous membrane. The pedicle is long and narrow and the base is small with a florid appearance, and when protruded from the anus after stool looks very much like a strawberry. In exceptional cases soft polypi may be due to dilatation of the glandular follicles. As a rule they are single, but occasionally they have been observed in great numbers.

Symptoms.—The symptoms of non-malignant growths,

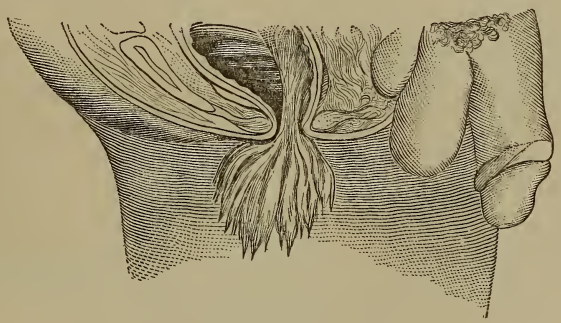

Fig. 26.—Adenoid (Soft) Polypus.

while not always characteristic, will often be of much assistance in making a diagnosis. Patients afflicted by polypus and other non-malignant growths seldom complain of pain. The first thing to attract their attention will be a slight bloody discharge after defecation. The bleeding may be slight, or, as we have seen, sufficient to weaken a child until he could scarcely stand alone. Hemorrhoids in the rectum of a child should at once lead us to suspect the presence of a polypus. Not infrequently the polypus acts as a foreign body and induces diarrhea or a discharge of mucus. The mother, in reciting the history of the case, will probably say, "Something comes down when the bowels move." This symptom is liable to lead one to suspect

prolapsus. The differentiation, however, can be made by introducing the finger into the rectum and passing it around the apex of the pedicle. The same holds good in reference to hemorrhoids; they have no pedicle, but are globular tumors.

Treatment.—The treatment of polypi in children is simple and always effectual. The proper treatment is to remove the polypus with the clamp and cautery (see Fig. 27); or, by placing a ligature around the pedicle at its attachment, that portion external to the ligature is cut off; or, after twisting it, it is

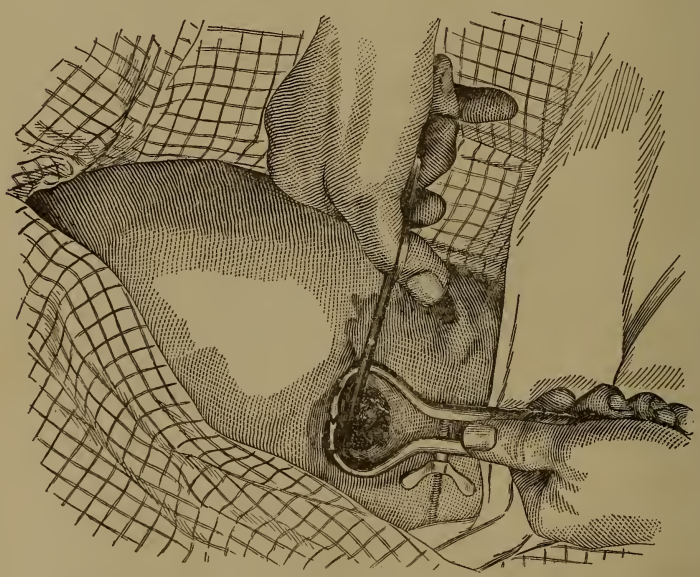

Fig. 27.—Removal of Polypus High up with the Author's Clamp.

snipped off with the scissors and some astringent is placed on the stump. The *palliative treatment* deserves slight mention in the treatment of polypi; it consists in the application of astringents as used for prolapsus. Astringents should never be resorted to except when consent to an operation cannot be obtained.

Fibrous, or Hard, Polypi.

The hard, or fibrous, polypi (see Fig. 28) occur in adults, and are more common in the rectum than those just described.

They appear to be formed from an increased growth in the fibro-cellular tissue beneath the mucous membrane, and covered by the normal membrane. The surface of the polypus may be smooth or irregular, being dependent on the shape of the submucous enlargement, which protrudes farther and farther into the bowel, until a pedunculated tumor is produced, over which the mucous membrane forms a covering. This variety of polypus is pear-shaped, and the pedicle is more or less elongated and thickened at times. It may be soft and flabby, though it is more frequently tough, firm, and reddish when incised. Fibrous, or hard, polypi vary in size from that of a small hazel-nut to that of a walnut, and in exceptional cases

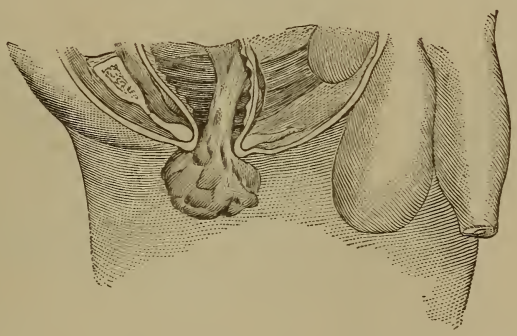

Fig. 28.—Fibrous (Hard) Polypus.

may be much larger. The attachment of this variety is usually somewhat higher than the adenoid variety, or else the pedicle is shorter, for we have experienced more difficulty in placing a ligature around them.

Symptoms.—When lodged in the bowel, it causes a sensation of uneasiness as if a foreign body or a lump of fecal matter should be discharged. Not infrequently it acts as an irritant, causing ulceration and a discharge of pus and mucus, inducing a spasmodic condition of the sphincter which becomes quite painful. When the pedicle gets long, the tumor protrudes during defecation, and has to be replaced when the act is completed. As a result, the polypus becomes ulcerated and bleed-

ing accompanies the protrusion. The patient usually attributes these symptoms to piles.

Treatment.—The treatment is similar to that of the adenoid variety. All that is required is the ligation and excision of the pedicle; or, if you prefer, it may be left there to slough off. Some authors prefer the *écraseur*. In case the pedicle is short, or the attachment so high that you are unable to ligate it, catch the polypus with a pair of strong forceps and twist it off

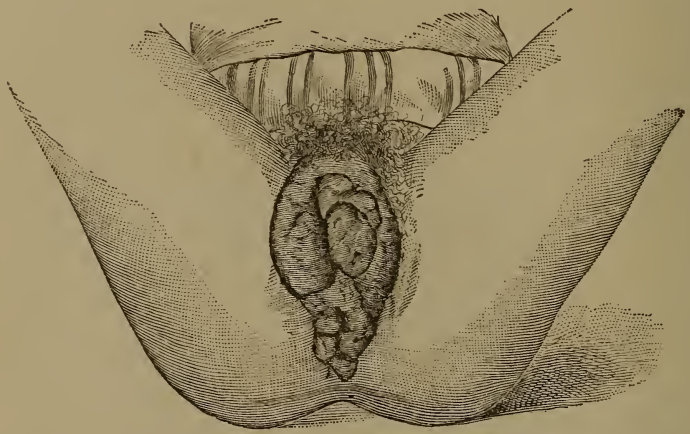

Fig. 29.—Pen Sketch of Fibromata from a Photograph of Case taken at the Author's Clinic by Mr. Joseph Lichtenberg.

and apply the actual cautery or an astringent at the point of attachment.

Disseminated Polypi.

In reference to this variety Cripps* says: "Considerable areas of the mucous membrane of both the rectum and colon may be thickly studded with these polypoid growths." He has only seen three cases of this variety, and, after searching through the London museums, concludes that they are of rare occurrence. He further speaks of dermoid and cystic polypi, but they are so rare that we will only mention them.

* Cripps, Disease of the Rectum and Anus. Second edition, p. 289.

ILLUSTRATIVE CASES.

Case V.—Large Fibrous Polypus of Several Years' Standing.

We were requested to examine a banker from a neighboring State. His family physician gave the following history of the case: The patient had a pile that had been coming down for several years every time his bowels would move; it would bleed at times, but until recently he could easily replace it. Now it was so large that it was exceedingly difficult to return. Of late there had been frequent discharges of mucus which irritated the skin about the anus, causing considerable pruritus. He was unable to sleep and to keep his mind on his business, and was very anxious to be cured. He was placed on the table and a digital examination made; the finger easily passed the tumor, and above it was found attached by a pedicle the size of one's little finger. The doctor and the patient were much surprised when informed that there were no piles, but a polypus which could be speedily removed. The patient was anesthetized, placed in the lithotomy position, the sphincters divulsed, the polypus pulled down by catch-forceps, and the pedicle ligated with strong silk at its junction with the mucous membrane. With a pair of scissors the pedicle was severed about one-fourth of an inch (6.3 millimetres) external to the ligature, the rectum was irrigated, and the patient put to bed. On the fifth day the patient returned to his home and had no further trouble with his rectum.

Case VI.—Adenoid Polypi.

A lady came to us, aged 40, to be treated for rectal disease. Examination revealed the presence of two small adenoid polypi about an inch (2.54 centimetres) in length, attached to the right wall of the rectum at the upper margin of the internal sphincter. They were promptly clamped, excised, and cauterized, and the patient recovered perfectly within ten days.

Villous Tumors of the Rectum.

Villous tumors are seldom met with in the rectum, only eight cases having been seen at St. Mark's Hospital, London, in fifteen years. They seem to be the dividing line between benign and malignant growths; often they resemble the latter, but are distinguished from them by their growing as free tumors into the bowel and by their short and broad base. Van Buren says that when a tumor has a pedicle he doubts its malignancy. In structure they resemble the adenoid polypi and have a sim-

ilar appearance to villous growths of the bladder. They are considered benign by most authors, though they have recurred after removal.

Symptoms.—The symptoms of villous tumors are similar to those of polypi, but the hemorrhages are probably more severe. They are rarely, if ever, met with in children. Their growth is gradual and they may become quite large. We remember one case where the tumor was as large as a goose's egg.

Treatment.—This consists in complete extirpation. With the patient in the lithotomy position and the sphincter stretched, the tumor is seized with a pair of pile-forceps and drawn down. Then the operator, with a blunt needle, should transfix the base of the tumor with a double ligature, cut this and tie both lobes of the pedicle, and cut off the tumor when the pedicle is long enough. If it has a very broad base it may have to be ligatured in several places similar to Bodenhamer's treatment for hemorrhoids; only the strongest silk should be used. In case consent to an operation cannot be obtained the tumors sometimes can be destroyed with the actual cautery or by the injection of astringents such as tannin, burnt alum, nitric acid, etc., into the tumor.

Anal Papillomata.

These growths resemble warts on other parts of the body. They originate in the papillary layer of the skin about the margin of the anus. They are generally multiple, of a dull-red color, fragile in texture, easily broken off, and bleed from the slightest irritation. In exceptional cases they are more firm. They are usually caused by discharges of pus from the rectum or a leucorrheal discharge. While papillomata are general in character, they are, as a rule, caused by acrid discharges. They are usually to be seen in patches, attached by small pedicles, while the extremity of the tumors bifurcate; and when there are a great number of them, they intermingle and form a large, flat tumor attached by numerous little pedicles that are moist and have a disagreeable odor.

Symptoms.—They may occur at any age and may vary from a single wart to a tumor surrounding the entire anus and extending upon the buttocks. The patient has pain during defecation; and when the papillomata become irritated, each passage is accompanied by frequent hemorrhages.

Diagnosis.—The diagnosis is usually not difficult, but papillomata must be differentiated from syphilitic condylomata, the latter arising from the mucous membrane, while the former arise from the integument. The papillomata may be present with the condylomata, being caused by the secretions of the latter.

Treatment.—When large, warty growths, they may be cut off with scissors and their points of attachment cauterized. When small they can be made to shrink up by the use of powdered alum, zinc, tannin, and iron. Strict cleanliness must be observed; and, if any cutaneous tags are present, they should be snipped off. Any disordered condition of the rectum, which might keep up a discharge, should be sought for and corrected.

CHAPTER VIII.

SYPHILITIC AFFECTIONS.

Syphilis may appear about the rectum or the anus in a variety of forms. It may manifest itself in different stages. Both chancres and chancroids have been seen in this region. They are seldom seen in the male unless he has been guilty of having unnatural intercourse (sodomy). Females are more liable to have them, owing to the close proximity of the rectum and the vagina. The chancroid in the female is of common occurrence, especially among prostitutes. When present they are usually multiple and situated at the anal margin, though they are sometimes as high as the upper part of the internal sphincter. True chancre is of rare occurrence, and is differentiated from chancroid by its hard edge, indurated base, etc.

Syphilitic Condylomata.

Syphilitic condylomata (see Plate V) are of common occurrence and resemble the warty growths, previously described, which are considered non-malignant. They vary in size from a small patch the size of a dime to that of a half-dollar or even larger. They develop from the simple syphilitic papule as a result of heat and moisture. They are raised above the skin and give off a foul odor. They may be smooth or nodulated, and a number of small patches may fuse, making one quite large one. When not treated early they irritate the skin, and the buttocks become ulcerated and bleed freely.

Gummatous Deposits.

Gummatous deposits are occasionally met with in the rectum. They usually precede ulceration and are followed by stricture, which will be fully dealt with in another chapter. The ulceration caused from a degenerate gumma is usually

PLATE V.-SYPHILITIC CONDYLOMATA.

Burke & McFetridge Co. Lith. Phila.

deep and spreads high up in the rectum and, in rare cases, to the colon. This induces hemorrhage, tenesmus, and diarrheal discharges, and, when a stricture is present, constipation. Gummatous deposits sometimes form in the tissues surrounding the rectum, which may cause obstruction. Specific ulceration will be considered more fully in the chapter on ulceration.

Congenital Syphilis.

Mucous patches have been noticed frequently in children who have syphilitic parents. We remember a family who had three children, all afflicted this way.

Treatment of Syphilitic Affections.—The treatment of syphilitic affections of the rectum and that of the anus are similar in many respects to that employed in its treatment elsewhere. Cleanliness must be strictly observed. If a chancre, a chancroid, or mucous patch is present, it must be cleansed two or three times daily with carbolized water or bichloride (1 to 2000); after which some good dusting-powder will be serviceable,—as iodoform, calomel, subiodide of bismuth, etc. The bowels should act daily, and a general syphilitic treatment prescribed. If there is any tendency toward the ulcerated areas' spreading, the edges should be cauterized with the actual cautery, nitric acid, or carbolic acid. Should the ulcer become chronic, incise it, or thoroughly divulse the sphincter. As a constitutional remedy the world-renowned blue pill, night and morning, will be of great value.

In the treatment of condylomata Cripps recommends that the parts be thoroughly cleansed and dusted over with the following powder:—

℞ Hydrargyri chloridi mite, . . gr. xx (1.39 grammes).
Iodoformi, ... gr. xxx (1.95 grammes).
Zinci oxidi, ... ʒj (4.00 grammes).
Pulvis amyli, ... ʒss (15.00 grammes).
M. Sig.: To be well mixed.

Simple dusting-powders,—like calomel, zinc, lead, and tannic

acid,—together with the internal administration of mercury, have always brought about the desired result in our own practice.

For gummatous deposits we are in the habit of prescribing the well-known mixed treatment, or the iodide of potassium alone in large doses. Beginning with 10 drops three times daily, it is pushed until the full physiological effect is obtained.

CHAPTER IX.

PROCTITIS AND PERIPROCTITIS.

Inflammation of the rectum is not an uncommon affection and not infrequently results in the production of an abscess or a fistula. There are several varieties, yet the symptoms are similar in many respects. I will now enumerate the recognized varieties of proctitis:—

1. Acute.
2. Chronic.
3. Dysenteric.
4. Gonorrheal.
5. Diphtheritic.

Acute and Chronic Proctitis.

The acute and chronic varieties of proctitis will be treated under one heading, for they are similar in everything; the only difference is that in the chronic form the symptoms have become modified and there is less pain and tenderness. Children are subject to the acute and older persons to the chronic forms of proctitis; in the former, because of frequent intestinal disturbances; and in the latter, frequently as a result of fecal accumulations. An attack of inflammation may be brought on by pressure from impacted feces, exposure to cold, or the accidental introduction of foreign bodies into the rectum. We have seen it follow in subjects where a syringe had been carelessly introduced. Hard, indigestible substances in the feces which scratch the rectum—as fish-bones, pins, or grains of parched corn—are sufficient to start up an inflammatory process. Strong purgatives and large doses of arsenic or corrosive sublimate, irritating discharges coming from above, and intussusception have all been known to set up an inflammation.

Symptoms.—The symptoms are different in a given number of cases, dependent on the duration, kind, and violence of the attack. The following are some of the more common symptoms subject to the above conditions:—

1. Severe tenesmus and sense of weight in the rectum.
2. Sensations of weight and fullness.
3. Frequent discharges of small quantities of blood, mucus, or pus.
4. Frequent spasmodic and unsuccessful attempts to evacuate the bowels.
5. A desire to micturate often, though retention sometimes occurs.
6. Constant straining, causing the mucous membrane to protrude.
7. When an ulcer is present an abscess may form and terminate in a fistula.
8. In general, any symptom present in inflammation of the intestine at any point may be found in proctitis in a modified form, such as radiating and reflected pains, and tenderness on pressure, etc. A simple attack will not last longer than eight or ten days, while the chronic form may last indefinitely, depending upon the cause and its removal. When the inflammation lasts only a few days there will be no appreciable change of the bowel except where ulceration occurs. In cases of long standing the mucous membrane becomes thickened and indurated and loses its sensibility to a greater or less degree, so that a considerable amount of feces may collect before there is a natural feeling to evacuate the bowel. Ulceration will be present in a goodly number of cases of long standing.

Dysenteric Proctitis.

In dysentery the lower bowel is often affected, especially in the tropical form, the symptoms being much the same as in the acute and the chronic forms, except that they are more general.

Gonorrheal Proctitis.

This affliction is of rare occurrence and is found more frequently in the female than in the male, owing to the close proximity of the genitals. It is caused by direct contact of the mucous membrane with the virus, as a result of carelessness and uncleanliness or to unnatural intercourse. French surgeons report many cases due to the latter. It is not a difficult thing for the discharge to pass from the vagina to the anus and come in contact with the mucous membrane during the act of defecation.

Symptoms.—There is a free discharge of white, purulent matter from the rectum; the rectum feels hot and swollen, and the pain is of an itching or burning character and is intermittent. The margins of the anus become chafed and the sphincter becomes irritable. Patients are frequently awakened by the spasmodic contraction of the sphincter and with a desire to empty the bowel. Gonorrheal proctitis is of short duration and can be differentiated by a careful study of the symptoms and the existence of a previous urethral inflammation. The discharge is more abundant and contains more pus than any other variety of inflammation of the rectum. By the aid of the microscope a positive diagnosis can be made.

Diphtheritic Proctitis.

The rectum, like the other portions of the alimentary tube, may be invaded by the ravages of diphtheria; it is of very rare occurrence, however. When it does occur the members of the family should be instructed to use the same closet with great caution.

Prognosis.—As a rule, inflammation of the rectum will not prove fatal or even serious except in cases where the cause cannot be located and removed. On the other hand, when inflammation is due to a simple cold, impacted feces, injuries, or foreign bodies in the rectum, a cure will follow the removal of the

irritation. The prognosis is less favorable in those cases complicated by fistula and ulceration.

Treatment.—The principles that should guide us in the treatment of proctitis are several, and in the order of their importance are as follow:—

1. Remove at the earliest opportunity the source of irritation.

2. Harsh and indigestible foods are to be discarded, and milk, soft-boiled eggs, soups, beef-juice, and albuminous foods substituted.

3. Clear the bowel of any scybala that might be present by injections, Epsom salts, Seidlitz powders, and mineral waters.

4. Insist on absolute rest in bed.

5. In mild cases cold applied to the hips and the anus or the injection of cold water into the rectum will be sufficient.

6. In long-standing cases use frequent injections of astringent solutions, such as alum, zinc, silver, lead, and the sublimate. When due to thread-worms a few injections of lime or salt water in conjunction with santonine internally will destroy them. If the inflammation is due to gonorrheal virus, frequent injections of water, as hot as the patient can bear it, do well. In a general way the treatment consists in keeping the bowels open and in correcting any errors in diet. When there is any ulceration present it should be treated the same as ulceration in other cases or from other causes.

Periproctitis (Ischio-Rectal Abscess).

The rectum is surrounded by loose tissues which not infrequently become inflamed from a variety of causes, and the inflammatory process may be either diffused or circumscribed, and, when not arrested, goes on to abscess formation. The pus burrows downward, forcing itself through the rectum, and is discharged with the feces or opens upon the surface of the body, thus making a fistula. Sometimes the inflammation starts within the rectum as a result of exposure to cold, an injury, or

from ulceration. Now and then we come across a case where the cause remains obscure. Again, those who have a tubercular diathesis are frequent sufferers from periproctitis. This is demonstrated by the great number of them who have fistula. Periproctitis has been known to follow operations about the rectum where asepsis had not been closely observed. In such cases the inflammation will be ushered in by a chill, followed by pain and a decided rise in temperature. In very exceptional cases the inflammation may take on an erysipelatous or gangrenous character, and must be radically dealt with at once, else it will prove fatal.

Symptoms.—The symptoms of perirectal inflammation are similar in many respects to those of proctitis. In this disease they become more exaggerated, and there are more constitutional disturbances and all the symptoms of pus formation.

Treatment of Periproctitis (*Ischio-Rectal Abscess*).—First ferret out the cause and correct it; then endeavor to reduce the inflammation by the application of cold, rest in bed, and the use of mild laxatives, etc. When fluctuation is present, absorption can hardly be expected to take place. It stands to reason that the sooner the pus is evacuated the better it will be for the patient, for it is likely to burrow through where an opening is not made, and terminate in a single fistula or multiple fistulas. Many of these patients can be saved much suffering by an early diagnosis of pus formation if an incision is made into the abscess and its cavity thoroughly cleansed with a boric-acid solution and free drainage established. The cavity should always be packed loosely with some antiseptic gauze after being irrigated daily with a sublimate solution one- to two- or three-thousandths. If the pain continue to be severe, keep on a poultice for two or three days after the abscess has been opened. Ordinarily, the abscess will point in the rectum or perineum. When in the former, it will invariably leave a fistula; on the other hand, when in the perineum or at the side of the anus, it is termed a perineal or an ischio-rectal abscess, and,

when taken in hand early by the surgeon, the pus can be prevented from burrowing and forming fistulas and much suffering avoided. Allingham treats these cases as follows: Under anesthesia, he incises the abscess from end to end in the direction from the coccyx in the perineum. Secondary cavities are then broken up with the finger so that only one cavity remains. If there is any burrowing outward, an incision is made in the buttocks at right angles to the first, after which the cavity is irrigated and packed with cotton-wool soaked in carbolic oil one part in ten or twelve. This is left in a day or two, when the dressings are to be changed. Ordinarily, a drainage-tube will not be necessary, and patients soon recover without the risk of inconvenience, for the sphincters have not been touched.

Marginal Abscess.

When a collection of pus takes place at the muco-cutaneous junction it constitutes a marginal abscess, about which the French have written so much, and it is the most simple form of abscess that we are called upon to treat about the rectum and the anus. The most frequent cause of this form of abscess is suppurating thrombotic piles that have not been incised and the clot turned out. Traumatism, exposure to cold, thread-worms, and ulceration may all be put down as causes; in fact, almost anything that would cause an abscess in any other portion of the body might be the cause of one at the anal margin.

Treatment.—From the time the patient begins suffering from that characteristic throbbing pain until you are permitted to incise the abscess, much relief can be had from the constant application of the ice-bag or of hot poultices over the seat of pain. The latter should be changed every half-hour to get the best effect. Just as soon as the circumstances permit, the abscess must be opened, curetted out, and drained. A prompt recovery will quickly follow. The finger should be passed into the rectum (or the vagina, in women) and pressure made out-

ward. This makes the parts bulge outward, and the cut can be made more intelligently.

Erysipelatous and Gangrenous Inflammation.

The symptoms and treatment of these forms of inflammation are much the same as similar conditions found in other parts of the body. In brief, the treatment consists in free incisions, frequent irrigations, and tonics.

CHAPTER X.

RECTAL AND ANAL FISTULAS.

This chapter would very naturally follow the preceding one from the fact that rectal and anal fistulas are the *sequels* of inflammation of the rectum and of the tissues immediately surrounding it. Fistulas occurring about the rectum and anus have for hundreds of years been described under the name of "fistula in ano," and for this reason we shall designate them as such, although it would be more scientific and expressive, as far as the location of the disease is concerned, if those fistulas opening high up in the rectum were designated *rectal* and those opening just within the anal margin *anal* fistulas. *Fistula in ano* was accurately described by Hippocrates, Celsus, and many other ancient writers; and the etiology as given by them, in a large measure, holds good to-day. From the time of the Christian era, or of Hippocrates, little was written about fistulas for several hundred years. The principal reason for this was that persons who had fistulas had an incurable disease, and, in the olden times, to have an incurable disease was to have a disgraceful one. Another reason why this disease was not seen and described more frequently was due to the fact that those who had it would not submit themselves to a visual and digital examination. In Hume's "History of England" he records the death of Henry V, King of England, in 1422. He says that the king was seized with a fistula,—a malady that the surgeons at that time had not the necessary skill to cure. Shakespeare has immortalized fistula in his play, "All's Well that Ends Well," written about 1606. Later, John Astruc, in his Latin thesis, translated into English in 1728, tells us that this disorder sunk almost into oblivion, and was scarce seen or heard of by the physicians until Louis XIV, of France, labored under it. Then the disease at once became fashionable, and a

vast multitude of cases suddenly appeared; and, after the king's example, every one made a voluntary and open confession of this once secret disorder. He further says that, in the reign of Tiberius Cæsar, the disease first showed itself. No man in Rome ever complained of it until the emperor had been severely attacked by it. It is stated that Louis XIV paid Monsieur Felix and his various assistants, in American money, the enormous sum of seventy-three thousand five hundred dollars for the operation.

There are some to-day who believe that this disease is incurable, and others that, if the fistula is healed and the discharge stopped, some internal organ will suffer from the pent-up matter. For these reasons many persons go through life, suffering great pain and annoyance, who have but a simple fistula that could be speedily and easily cured, and with very little pain at that, if they would only place themselves in the hands of a competent surgeon and be operated upon. Statistics show that fistula occurs more frequently than any other rectal disease, and that males are more often afflicted with it than females. At St. Mark's Hospital,* in London, very nearly one-third of the total number of all the cases treated in that remarkable institution suffered from fistula. This is hardly a fair comparison of the relative frequency of this disease, because this hospital has a world-wide reputation for curing *fistula;* and it is very natural that more persons afflicted with this complaint go there for treatment than those suffering from other rectal diseases. The proportion of fistula to other rectal diseases is always much greater in hospital and dispensary than in private practice. In private practice we have been called upon to treat both hemorrhoids and ulcerations (including fissures) more often than fistula, and we are of the opinion that the experience of many other American surgeons has been the same. A *fistula in ano* may be defined as a *non-granulating sinus with two openings,—one upon the surface of the body near the anus and*

* Cooper and Edwards, Diseases of the Rectum and Anus, p. 4, 1892.

the other within the rectum; this would constitute a complete or typical fistula. There are several other varieties of fistula, each of which we will speak of in turn. Nearly all fistulas are the result of an abscess which has formed in the perirectal tissues and opens into the rectum or upon the surface; and the sinus thus formed ordinarily will not heal of its own accord. Abscesses that produce *fistula in ano* will be found in one of the following locations:—

1. Between the mucous and muscular coats of the rectum.
2. Between the rectum and the levator ani muscle.
3. Anywhere in the ischio-rectal fossa.
4. Just beneath the skin near the anus.

An abscess located in one of the above positions forms and bursts and the pus makes one or more outlets, depending upon the direction it has taken. The kind of fistula produced depends not only upon the direction taken by the pus in its endeavor to seek an outlet, but upon the number and location of the openings produced. We have the following recognized forms of rectal fistula:—

1. Complete.
2. Blind internal.
3. Blind external.
4. Complete internal.
5. Complete external.
6. Horseshoe.
7. Recto-vaginal.
8. Recto-vesical.
9. Recto-urethral.

The last three varieties do not come under the classification of fistula as usually given because of their contact with other organs.

Complete Fistula.

When we speak of a fistula without designating any special variety we mean a complete fistula (see *A*, Fig. 30, and Plate VII), or one that has two openings,—one upon the surface of the body in the neighborhood of the anus and the other opening into the rectum. These openings vary as regard location. As a rule, the internal opening will be found about the

junction of the external and internal sphincters, though in not a few cases it will be found higher up. The external opening will ordinarily be found within an inch (2.54 centimetres) of the anus, and in many cases just opposite the internal opening. Again, the external opening may be quite a distance from the anus, and the sinus leading from the external to the internal opening may be very long and irregular.

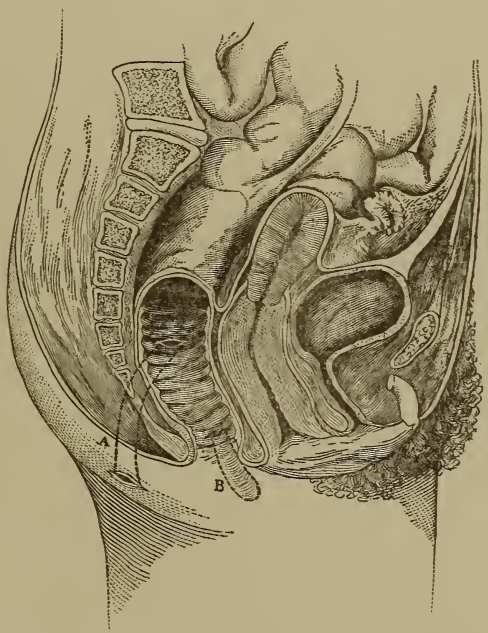

Fig. 30.—*A*. Complete Fistula. *B*. Blind Internal Fistula.

Blind Internal Fistula.

This form of fistula (see *B*, Fig. 30) consists of a sinus that does not have any external communication, but an internal opening into the rectum. While not so common as the complete variety, one who treats rectal disease as a specialty will meet many such cases and will find them, in many instances, very difficult to diagnose.

Blind External Fistula.

This variety (see *A*, Fig. 31) is formed from an abscess located in the subcutaneous tissues, the pus from which has found an outlet upon the surface and does not communicate with the rectum at all, though it burrows in that direction if not operated upon. This form of fistula is very rare, being seen less frequently than the blind internal variety.

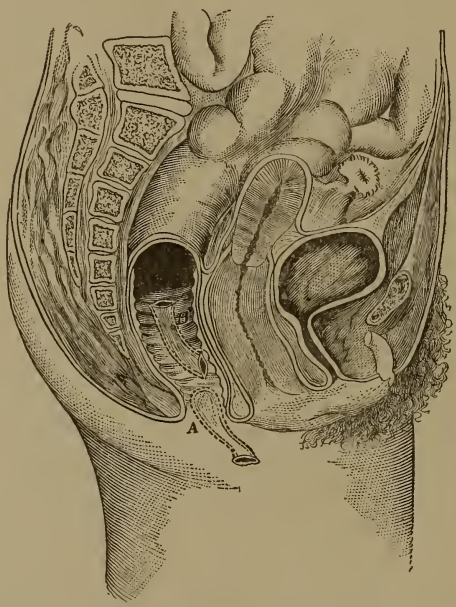

Fig. 31.—*A*. Blind External Fistula. *B*. Complete Internal Fistula.

Complete Internal Fistula.

This variety (see *B*, Fig. 31) is seldom met with. It consists of a sinus with two openings into the rectum, and is very difficult to diagnose, but easily cured when the tract is slit up.

Complete External Fistula.

This form (see *A*, Fig. 32) is also quite rare, and consists of a sinus with two openings, both of which are external to the rectum,—one situated just at the margin of the anus and the other at some point on the buttock.

Recto-Vaginal Fistula.

In this variety the sinus opens into both vagina and rectum (see *B*, Fig. 32). They are not uncommon, and when the opening between these two organs is not very small fecal matter will escape into the vagina. This condition is easy to diagnose.

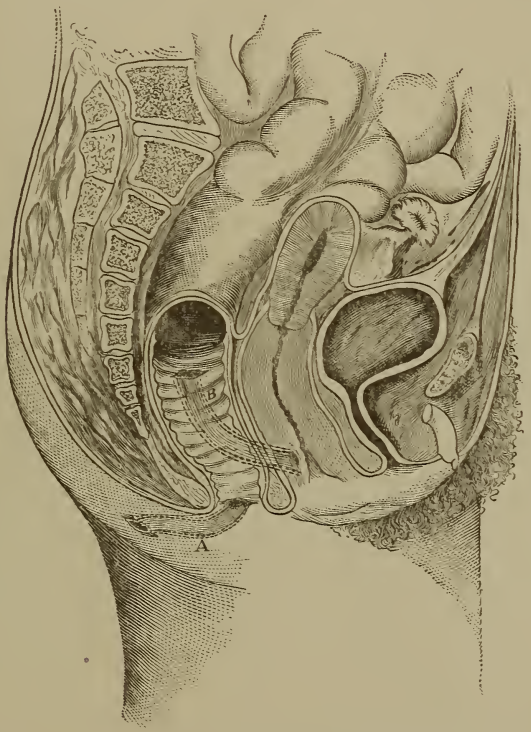

Fig. 32.—*A*. Complete External Fistula. *B*. Recto-Vaginal Fistula.

Horseshoe Fistula.

This form of fistula (see Fig. 33) gets its name from the fact that the fistulous sinus courses around the rectum from one side to the other, shaped to some extent like a horseshoe. There are one or more openings into the buttocks on both sides of the anus, communicating with each other and with the rectum usually by an opening into the posterior wall of the bowel,

though in some cases there may be two or even more openings into the rectum. In a bad case of horseshoe fistula there may be multiple sinuses and openings. We remember one case where there were nine external openings, and the buttocks looked very much as if a load of buckshot had been emptied into them.

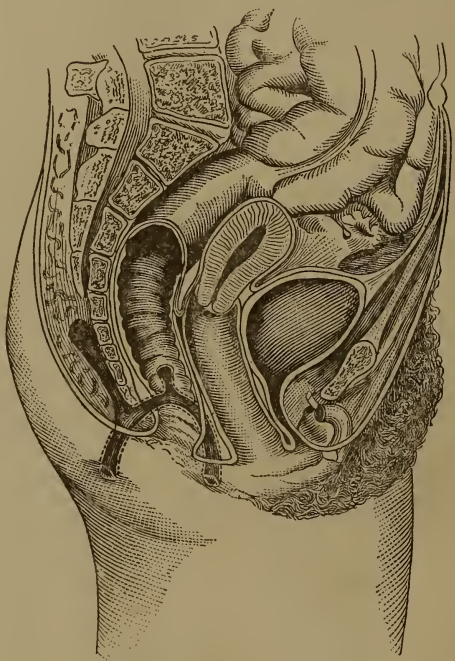

Fig. 33.—Horseshoe Fistula.

Recto-Vesical Fistula.

This variety (see *A*, Fig. 34, and Plate VI) is one where there is a communication between the rectum and the bladder, as a result of an abscess discharging into both organs, and wind and feces may pass by the penis and the urine may empty into the rectum. A severe attack of cystitis usually occurs, which induces much suffering until the patient dies or an operation is required. The diagnostic point is the passing of urine and feces through unnatural channels.

PLATE VI.- TYPICAL CASE OF RECTO VESICAL FISTULA SHOWING RESULT OF EXTRAVASATION OF URINE INTO SCROTUM AND PENIS.

Burk & McFetridge Co. Lith. Phila.

Urinary, or Recto-Urethral, Fistula.

These fistulas (see *B*, Fig. 34) are rare, indeed. In such cases the rectum communicates with the urethra at some point. Cripps has reported a very interesting case which healed spontaneously.

General Remarks on Fistula.

Fistula is the sequel of an abscess, as a rule. Some claim that we may have a fistula in tuberculous patients without a distinct circumscribed cavity's being formed. We have never

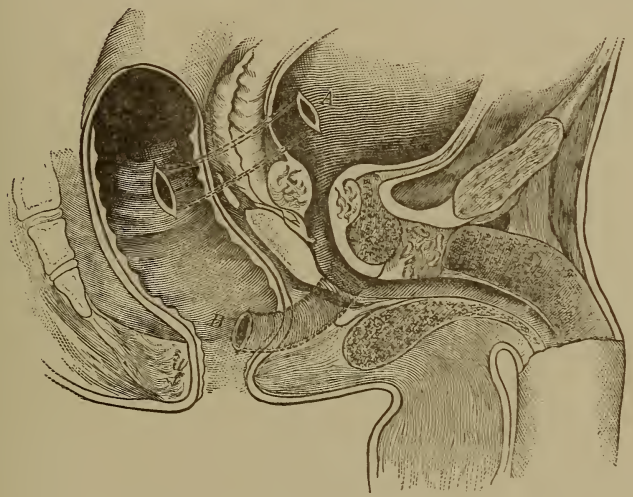

Fig. 34.—*A*. Recto-Vesical Fistula. *B*. Recto-Urethral Fistula.

seen a case of this kind, but always find that an abscess had formed as a result of an ulceration or poisonous matter escaping into the deeper tissues, or from any of the many causes of abscesses mentioned in the previous chapter, such as inflamed piles, exposure to cold, injuries, thread-worms, etc. The abscess-cavity and sinus gradually become a fistulous sinus, because the feces constantly get into it and prevent healing. The spasmodic contraction of the sphincter also tends to delay it. Sometimes a fistula will occur as a result of necrosis of the coccyx or sacrum.

Any person, irrespective of age, climate, or occupation, may have a fistula. Men are more subject to fistulas than women, and during middle life; children rarely have them. We remember seeing only one case,—that of a child, 18 months old, that had thread-worms accompanied by an abscess which resulted in a fistula. The mental worry of persons who are aware that they are suffering from fistulas is very great until they are cured; and yet many of these sufferers will endure much pain and annoyance for a long time before they will submit to a cutting operation. They will readily consent to anything except the use of the knife,—the right thing.

SYMPTOMS.

Ordinarily the patient will say that the discharge was preceded by great pain, heat, swelling, and other symptoms which would likely accompany the formation of an abscess, and that the acute symptoms disappeared when the pus made its exit. A fistula once established, the following symptoms will be present: There will be a discharge from the external opening, which, in the majority of cases, will be found a little to one side of the anus. The discharge will be abundant, thick, and almost *constant* in a new fistula, while in an old one it will be very thin and watery. When the discharge is *interrupted*, it is well to suspect that there are other sinuses leading off from the main tract. The discharge is very annoying to the patient, for it keeps the linen soiled and the skin inflamed. Sometimes the opening is small or becomes closed, and the discharge ceases for a short time, leading the patient to believe that he is well. It will not be long, however, until there will be a renewal of pain and swelling, followed by a fresh discharge of pus through a new outlet. The pain in a fistula is slight when the external opening is large, but will be very severe when it is small and will not allow the discharge a free and unimpeded exit. Wind and feces may escape through it and give a foul odor to the discharge.

DIAGNOSIS.

The diagnosis of a complete fistula under ordinary circumstances is not a difficult thing. Much more ingenuity will be required in locating the blind internal and horseshoe varieties. It stands us in hand not only to locate the fistula, but also to ascertain and locate the number and direction of any other sinuses that might communicate with the main one. In order to make a thorough examination it is necessary to have a firm table and a good light. Some prefer to place the patient in one position, some in another. The three favorite positions are: first, the Sims, with the patient on the affected side and the limbs flexed on the abdomen; second, the genupectoral; third, the lithotomy position. We favor the last, but do not use it exclusively. After the patient has been placed in position the buttocks should be separated and external openings should be searched for. When present, the opening will be found in the centre of a small depression, or, more frequently, in the centre of a small, elevated mass of granulations. Next, pass the finger about the anus and the immediate vicinity, and, by palpation, fistulous tracts in the subcutaneous tissues will be readily detected by their hard feel. This diagnostic point will prove valuable when searching for the blind internal variety. In case the external opening has been found, oil the finger well and pass it into the bowel. If an internal opening exist it can be detected by its indurated and, in some cases, rough edges. Frequently the opening will be found just between the internal and external sphincters. It is not uncommon, however, to find it much higher up. In case the internal opening cannot be located, milk should be injected through the external opening, and it will force its way into the bowel through the internal opening, which can then be easily located. A probe should be used very cautiously. No force should be applied lest it be pushed through the main sinus into the soft tissues, where it can be passed in any direction, thus leading the examiner to believe that he has found a very extensive

fistula, when, in reality, it is a short and simple one. All ulcerated spots and inflamed pockets should be examined closely, for not infrequently there is hidden within the mouth a blind internal fistula.

TREATMENT.

Now and then a case is reported where a fistula has healed spontaneously. It is needless to say that such a one is an exception. Palliative measures, in most cases, are of little service; they consist in keeping the bowels in proper condition, of applying stimulating applications to the sinus and keeping it clean, together with medicines that will be likely to improve the patient's general condition. If the patient will consent to let you operate, do so at once. At the same time, take every precaution to let the patient lose very little blood, especially in anæmic or consumptive patients. Any other rectal disease present, such as piles, ulceration, stricture, etc., should be remedied during or preceding the operation, else it may cause failure. Allingham says that we should never operate on a fistula that is from any cause acutely inflamed, on account of the likelihood of fresh sinuses forming, for the areolar tissue breaks down very readily. He believes in making a free, dependent opening until the inflammation subsides; then the operation may be completed. There are six recognized methods of operating for fistula:—

1. Dilatation.
2. Injection of astringent fluids.
3. Ligation.
4. Division by (*a*) the knife; (*b*) Paquelin cautery-point.
5. Excision.
6. By fistulatome.

A purgative should be given one or two days before the operation, and the rectum should be thoroughly emptied by an injection one hour previous to the same. The neighboring parts must be cleansed and shaved, if necessary. Then the operator can proceed to do the operation which is best suited to the case in hand.

We wish to state, in this connection, that we never resort to any operations we have named, barring that of complete division, except in phthisical patients who can ill afford the loss of even a small quantity of blood, and in those unconquerable individuals who absolutely refuse to have the knife used.

Dilatation.—This operation consists in keeping the mouth and all or part of the sinus dilated, that the pus may have a free exit, and granulations stimulated by lacerating it along its entire length with some rough instrument, or the direct application of some astringent, as zinc, silver nitrate, alum, and carbolic acid. Allingham prefers the latter, and inserts a rubber drainage-tube into the sinus and gradually withdraws it as healing takes place. The dilatation may be made with instruments, sponge-tents, or anything which may bring about the desired result. This procedure scarcely deserves to be called an operation; at the same time, we could not call it a palliative measure.

Injection of Astringent Fluids.—Any of the ordinary astringents—zinc, iron, silver, carbolic acid, or ergot—will do, as well as any others, with possibly the exception of ergotine. They must be injected in and around the sinus. If, by any means, fecal matter can be kept out of the fistulous sinus during the treatment, a very important point is gained. To do this we resort to the following plan: After the sinus has been cleansed with soap and water and followed by the peroxide of hydrogen, we take a probe threaded with a silk ligature, on the end of which is attached a small wad of cotton, and pass it through the external opening and into the rectum, when it is caught and drawn downward. At the same time the cotton is carried along the sinus until it can be felt just beneath the mucous membrane under the internal opening, the probe is detached, and the ligature left hanging inside the bowel. In this way all fecal communication is cut off. Then the injection is made and the needle withdrawn slowly as the fluid is forced out. An ordinary hypodermatic syringe can be used, if it has an extra

needle with a blunt point about three inches (7.6 centimetres) in length or an extension-piece. The operation must be repeated several times. When healing takes place it is from within outward. When it reaches the surface of the body the cotton can be removed by jerking out the ligature in the bowel, after which a final injection should be made into the bowel at the seat of the internal opening, and the treatment is completed. We have cured a few cases in this way, and our patients have been very grateful, though in many the treatment proved a total failure. This method of treating fistula causes more pain and requires a longer time to effect a cure than does the more radical operation of division.

Fig. 35.—Allingham's Elastic Ligature Carrier.

Ligation.—To Allingham, Sr., and Prof. Dittel, of Vienna, belong the credit of bringing this method of operating on fistula before the profession. Neither of them, however, originated it, for an accurate description had been given it by Celsus. The operation consists in passing a ligature through the sinus and out at the anus. After the ligature is tied tightly, it constricts all intervening tissues and is allowed to cut its way out. The ligature can be introduced threaded on an ordinary probe which has an eye, or by means of Mr. Allingham's ingenious instrument (see Fig. 35), by means of which it can be drawn from within the rectum to the outside. The ligature used may be ordinary silk or it may be elastic, the latter being preferable because it makes a uniform pressure. A piece of solid India

rubber from one-twelfth to one-eighth of an inch (2.2 to 3.2 millimetres) in thickness is the most desirable, the ends of which can be secured by slipping a piece of lead with a slit in it over them, the lead being secured by the aid of strong forceps. The following are some of the advantages claimed for the ligature operation :—

1. It does away with the knife.
2. Can be done without an anesthetic.
3. It is comparatively painless.
4. It permits the patient to walk about in the fresh air.
5. There is no bleeding.

We will now enumerate some of the objections that have been raised against this operation :—

1. It requires a longer time to effect a cure than does incision.

2. Only the main sinus can be included; hence the operation will be a failure when there are other sinuses leading off from the main one.

3. The ligatures have been known to cut only *part* of the way out, thus requiring the knife to divide the remaining tissues.

4. It is not suitable for operations on fistulas in general. As we take it, the field for ligature operation should be confined to persons who refuse to be operated upon by the knife and those who are anemic or have phthisis. This operation is especially adapted to the treatment of phthisical patients from the fact that they can take their usual amount of out-door exercise while the ligature is sloughing off with comparatively little annoyance, and, further, from the fact that they have not lost any blood.

Division.—The patient should be anesthetized unless the fistula is a superficial one that can be divided easily, when this operation is selected. There will be considerable pain and the surgeon does not always know how extensive the operation may be before he gets through. Frequently there will be unsuspected

sinuses that require incising, and they may lead far out into the buttocks. At least two assistants will be necessary, one to give the chloroform and the other to hold the buttocks well up out of the way; and, if you have a third, so much the better, for he can handle the sponges and instruments. We shall first speak of operating on a simple or a complete fistula, which is done after the following manner (see Plate VII): A groove director suitable to the size of the sinus is introduced into the outer and

Fig. 36.—Gorget.

through the inner opening into the rectum. It is then brought out at the anus by the index finger of the left hand, introduced into the rectum for that purpose. Then with a strong, straight, or curved bistoury divide the entire bridge of tissue resting on the director. This should be done as nearly at a right angle to the sphincter as possible, and not in an oblique direction as some do, for incontinence is more apt to follow the latter. When the fistula is not a deep one the silver groove director is

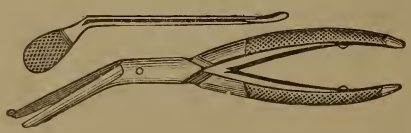

Fig. 37.—Allingham's Scissors and Groove Director.

preferable, because it is more pliable. In cases of extensive fistula it is well to have a number of steel groove directors, of different lengths and sizes, that will not bend, to use in operations where the sinuses are long, indurated, and where the internal opening is situated so high up in the rectum that the distal end of the director cannot be brought out at the anus. In such cases a piece of soft wood, or a steel gorget (see Fig. 36) one-half inch (12.7 millimetres) wide and eight inches

PLATE VII.-TYPICAL CASE OF FISTULA IN ANO WITH OPERATION FOR SAME

Bunk & McFetridge Co Lith Phila

(2 decimetres) long, is introduced into the rectum after the director is in proper position. The knife is then made to follow the director along the fistulous tract until its point enters the rectum and is pressed into the piece of wood. Both should then be drawn together, thus severing all the intervening tissues. Allingham's scissors and director are especially adapted for such cases. (See Figs. 37 and 38.) There is a knob on the under surface of the lower blade which is made to follow in the oval groove in the director, cutting the tissues from without inward.

Fig. 38.—Proper Method of Using Allingham's Scissors and Director.

One cannot be too careful in the selection of cutting instruments for operating on fistulas. They must be strong and of the very best metal, else they are liable to snap in two when they come in contact with a deep sinus made up of scar-tissue. We had the misfortune in one case to break the knife and the operation was delayed for a considerable time before we succeeded in finding the broken blade and removing it. Another and a better way when the sinus reaches high up the bowel, or when other sinuses are suspected, is to dissect slowly from below upward,

following the director until the end of the sinus is reached; then any diverticula from the main sinus will not be overlooked. After complete division of all the tissues of a complete fistula, it is well to curette the entire tract or do as Mr. Salmon has recommended: make an incision along the entire bottom of the fistulous tract. This will insure healing from the bottom.

Excision.—A few years ago Dr. Frederick Lange reported a number of cases successfully treated by excision, and recommended this procedure. The operation for some reason has not become popular. It is done after the following manner: The entire sinus should be laid open in a manner similar to that of the operation for a complete fistula. Then all of the old fistulous sinus should be carefully dissected out and the entire surface dusted over with some antiseptic, the rough surfaces perfectly adjusted with catgut sutures, and a dry dressing applied. If the operation is a success there will be very little need for after-dressings, since the wound will heal in a few days by first intention. In case it should not, it can be treated as after the ordinary operation. We have performed this operation a number of times, and have not been satisfied with it, for in all except a few cases we did not get healing of the entire wound by first intention; and some of the operations were not only tedious, but difficult to do, owing to extensive cicatrices. The operation has proved eminently successful in cases where there were two or more external sinuses that communicate with each other and with the rectum. By dissecting out the sinus between the two external openings and bringing the edges together with catgut sutures, after the main one had been divided, a good result was obtained in every instance. The sinus between the two external openings healed by first intention and the main one, leading into the rectum, by granulation.

By Fistulatome.—That distinguished Southern surgeon, Dr. Mathews, of Louisville,* has devised a very ingenious instrument, the "fistulatome" (see Fig. 39), which he recom-

* Mathews. Diseases of Rectum and Anus. First edition, p. 211.

mends in selected cases. As yet we have never used this instrument; so can neither commend nor condemn it, from an experimental stand-point. We believe, however, that its sphere of usefulness is limited to those cases where extensive cutting is contra-indicated and to cases where patients cannot be persuaded to have a better and more radical operation performed.

Blind External Fistula.—In this variety there is no opening into the bowel. They are to be operated on just like the

Fig. 39.—Mathews's Fistulatome.

complete variety, after an opening has been made into the rectum by forcing the director through it, thus making it complete.

Blind Internal Fistula.—In this variety, after the sphincter has been divulsed, the speculum introduced, and the internal opening located, a director (see Fig. 40) or probe is passed into it and passed downward until it makes the skin bulge out;

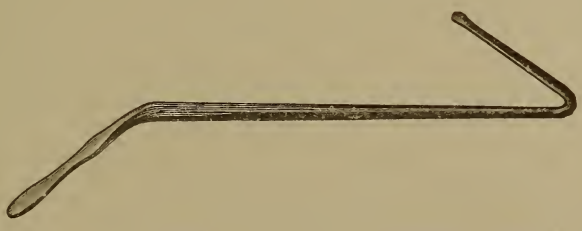

Fig. 40.—Author's Angular Groove Director for Blind Internal Fistula.

then, with a bistoury, make an incision over the end of the director. It then slips through and you have a complete fistula, and all tissues on the director are divided.

Complete External Fistula.—This variety is usually superficial, and can be divided without any anesthesia by introducing the director into one external opening and out at the other, and quickly severing the intervening tissues.

Complete Internal Fistula.—The only difference in oper-

ating on this variety and the one just described is that the speculum is necessary that the openings may be located and the director introduced, after which the operation is performed as previously described.

Horseshoe Fistula.—When two or more external openings appear upon the buttocks a thorough examination should be made to ascertain whether there be two distinct fistulas or if the two external openings communicate with each other and with the rectum by one sinus, constituting a horseshoe fistula. (See Figs. 33 and 41.) When the latter condition is found, it gives the surgeon a chance to display his ingenuity in doing the operation as it should be done,—namely, all the sinuses between the external openings should be laid open first, then made to communicate with the rectum by dividing the main sinus. (See Fig. 42.) In this way the sphincter is severed but once and there is little danger of incontinence's following the operation. On the other hand, if the director is passed into each of the outer openings, forced into the rectum, and the tissues divided once for each opening, the sphincter will be cut two or more times and the danger of incontinence is materially increased. Incontinence almost invariably follows when the sphincter has been divided three times. In exceptional cases, however, incontinence will follow in spite of every precaution. Knowing this to be a fact, we always mention to patients the possibility of this accident following the operation, though it is not likely to occur; then if, after this explanation, incontinence does occur, the patient will take part of the blame upon himself for submitting to the operation. On the other hand, if you do not caution him, and incontinence follows, he will never forgive you, and he is likely to refuse the payment of the bill and bring suit against you for malpractice.

Recto-Vaginal Fistula.—The question is sometimes raised as to who should operate on this variety of fistula,—the rectal specialist or the gynecologist. So far as our practice is concerned, we have been in the habit of operating on all such

cases coming to us for treatment, and we are willing to concede to our gynecological friends the same privilege. In the treatment of this form of fistula the principle of the operation is much the same as in other varieties. Some dissect out the fistulous tract and suture the edges together and endeavor to get union by first intention; others divide the sinus and allow it to heal by granulation; and still others prefer the elastic ligature. For a further and more complete description of this operation we respectfully refer the reader to the standard works on diseases of women.

Recto-Vesical Fistula.—When due to malignant disease, local operations will be of little benefit and inguinal colotomy should be performed at once. The relief afforded will be marked and the patient will be made comfortable as long as he may live. On the other hand, when the communication between the bowel and the bladder has been caused by an injury or an abscess, a local operation will often prove a success. In case the patient refuses to have the knife used, the application of caustics to the opening, or, better still, the actual cautery will sometimes induce healing. Mr. Edwards, of London, reports two cases cured in this way.

Recto-Urethral Fistula should be treated by cauterization, actual or medicinal, or the edges of the fistulous opening should be pared off and sutured together. The judgment of the operator must be used in the treatment of this variety, for the operation suitable to one might not do for another. Stricture is the most potent cause of this form of fistula, and must be relieved first, else any operative procedure for the cure of the fistula will prove a failure.

Before referring to the after-treatment we desire to review briefly some of the more salient features connected with the operations for the cure of fistula:—

1. Always operate under rigid aseptic conditions.

2. Be certain that all sinuses and diverticula have been divided.

3. See that the director is not forced out of the main tract into the neighboring tissues.

4. Divide the sphincter at a right angle and not obliquely.

5. Ligature or twist all spurting vessels.

6. Guard against injuring the peritoneum when the sinus is high up.

7. Guard against cutting the vagina, prostate, or urethra when the sinus is in the anterior wall of the rectum.

8. Do not operate on patients suffering from acute phthisis or Bright's disease.

9. Give patients the benefit of the sun as much as possible.

10. Do not pack the dressings tightly after the first twenty-four hours, but lay the gauze loosely in the bottom of the tract.

11. Warn your patient of the possibility of incontinence's following the operation.

12. Be guarded in your prognosis.

After-Treatment.—The after-treatment of fistula is of almost as much importance as the operation itself; for, undoubtedly, many of the failures following operations for fistula have been due to inattention in taking care of the wound while granulating or to meddling with it too much. Our plan is to pack the sinus firmly with gauze immediately after all bleeding has been arrested. This dressing is then left *in situ* for twenty-four hours, by the end of which time the dressing has become hard and dry, necessitating a change. The gauze can be removed slowly and with little pain if a stream of bichloride solution is allowed to play upon it. The wound is then thoroughly cleansed with peroxide of hydrogen, carbolic acid, or boiled filtered water, after which fresh gauze is laid loosely in the bottom of the sinus to insure its healing from the bottom. We have time and again seen healthy granulations arrested by too frequent dressings and where the dressings were packed too firmly in the sinus. The wound should never be probed unless there is positive evidence that pus is forming in the deeper tissues. When this occurs there will be a sudden rise in the temperature and an increase

of pain. As a rule, it will not be necessary to tie the bowels with opium, as many surgeons do, when the patient has been properly prepared for the operation. The diet afterward is light and should be confined to fluid and semi-solid foods. Ordinarily the bowels will not move of their own accord before the third or fourth day, and sometimes not for a week. When they do not move on the fourth or fifth day a dose of castor-oil, salts, or a Seidlitz powder is prescribed, to be followed by an injection of warm water to soften the movement. Any one of the reputable mineral waters known to have a cathartic action may be prescribed with satisfaction. After each action the parts should be cleaned and fresh dressings applied. The food must be limited to strong soups, soft-boiled eggs, and actual beef-juice, until the fistula is healed sufficiently to permit the passage of full-sized motions without harm's being done. The pain, after these operations, is usually very slight, except at the time when the dressing is made. In case the pain is sufficient to keep the patient awake, one-fourth grain of morphine hypodermatically is prescribed at bed-time. It produces the desired effect and seldom has to be repeated after the first night. For the first few days all patients are required to rest quietly in bed, after which time they are allowed to lie on a lounge in the sunshine, but must not walk about until the sinus has almost entirely healed, for too much exercise tends to arrest granulation. The most important thing in the after-treatment is to see that the sinus heals from the bottom. In many cases there will be a tendency for the skin to bridge over near the anus, leaving a channel below. This must be broken up with a probe. It is well, also, to look out for burrowing sinuses. They will be indicated by a *rise of temperature*, increased pain, and a more abundant discharge than would be expected from the original granulating sinuses. When such sinuses are found they must be laid open at once and treated like the original one. When granulations are sluggish or arrested, simple irrigation will not be sufficient, and some stimulant must be applied. There are many

good ones, such as balsam of Peru, nitrate of silver ten grains to one ounce, carbolic acid, zinc, calomel, carbolized oil, and the stearate of zinc with iodoform, etc. We prefer lotions and powders to ointments, because they do not soil the linen and do quite as well.

PROGNOSIS.

Patients almost constantly inquire how long the operation will confine them to the bed. This question cannot be answered with any degree of certainty until after the operation, for a fistula that at first appears to be a simple one may prove to be complex, having many sinuses leading off in different directions from it. Operations for fistula seldom terminate fatally unless the cutting has been very extensive. The time required for patients to get well depends on the vitality of the patients and the magnitude of the operation. An ordinary case will get well in two weeks; in others, when the sinuses are long and deep, it will take from four to six weeks and even longer.

ILLUSTRATIVE CASES.

Case VII.—Horseshoe Fistula.

Mr. L., referred to me by Dr. Ketchersid, of Hope, Kansas, aged 38 years, farmer, came under my care suffering from a fistula. He attributed its origin to an injury received from a fall upon the frozen ground that gave rise to an abscess, which pained him a great deal for several days. He applied poultices; the fistula pointed and was lanced on the eighth day and the pus evacuated. The incision made was too small and, in spite of fresh poultices, it closed again. The pain and throbbing returned for a few days, when it burst and a large quantity of pus escaped. This thing occurred a number of times; every time the opening closed a new abscess formed and new openings would appear on the buttocks above and in front of the anus in the perineum. During this time his suffering had been very great, notwithstanding the fact that he had used many medicines, lotions, and ointments. One gentleman proposed an operation, but this he refused, because he did not want to be confined to bed. At length his suffering became so great that he concluded to submit himself to proper treatment. When I first saw him his general health was good and he complained of nothing except the

pain and itching caused by the discharge, which kept the parts about the anus irritated. The skin immediately surrounding the openings was of a dull, purplish-red color, and the indurated, fistulous sinus could be easily traced along the subcutaneous tissues with the finger; five well-marked openings were located (see Fig. 41),—two in the perineum, two on the left buttock and one on the right buttock; one of the perineal openings was just below the scrotal attachment near the centre, the other was one inch (2.54 centimetres) below and a little to the left of the upper one. On the left buttock one of the openings was one and a half inches (3.76

Fig. 41.—Horseshoe Fistula with Multiple Openings.

centimetres) from and a little above the anus, while the other was below and about one inch (2.54 centimetres) from the anus. The opening (see Fig. 41) on the right buttock was situated far out on the buttock, about five inches (12.7 centimetres) from the anus. On examination I found that the perineal openings communicated with each other and with the openings upon the left buttock, but none communicated with the rectum; and, further, that the one on the right side did, for I could pass a probe through the outer opening and it entered the rectum at least two inches (5 centimetres) above the anus. Digital examination revealed the presence of a firm fibrous or cartilaginous band about an inch (2.54

centimetres) thick, extending across the rectum nearly two inches (5 centimetres) above the anus. The patient was ordered to take a bath, two teaspoonfuls of licorice-powder to be taken at once, and an injection to be given on the following day, one hour previous to the time set for the operation. The parts having been previously shaved and the patient thoroughly anesthetized, a groove director was passed from one perineal opening to the other and all intervening tissues were divided. Then the sinus extending thence to the upper opening on the left buttock was divided, after which the director was easily made to pass into and

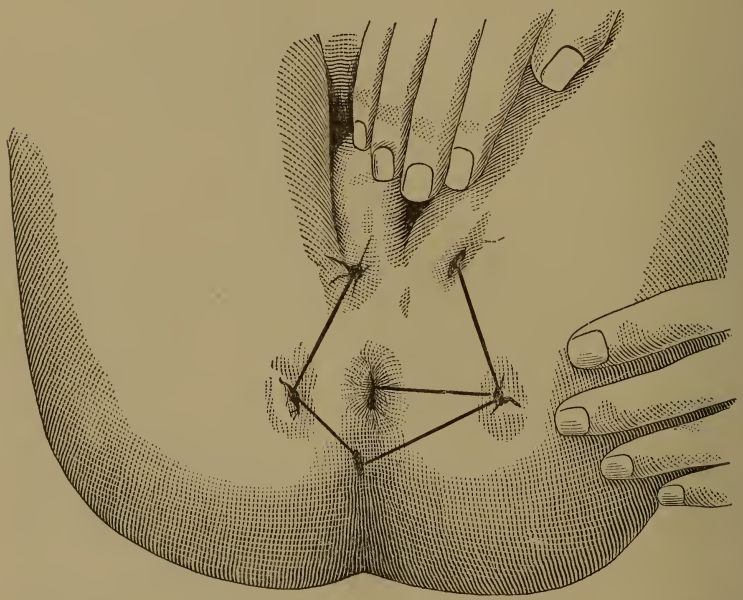

Fig. 42.—Lines of Incisions showing how the External Sinuses were Made to Communicate with Each Other and with the Rectum and the Sphincters Severed but Once, and then at a Right Angle.

through the lower opening on the same side, which was treated in a similar manner. A careful search was made to see if there were any communication with the bowel, but none could be located, and I directed my attention to the opening on the right buttock. It was found that an ordinary groove director was far too short to reach from the external opening into the bowel, and a long and very strong steel director was selected and passed into the external and through the internal opening within the bowel, where it could be felt with the index finger of the left hand introduced for that purpose. It was found that the tissues to be divided were so firm and thick that the internal end of the director could

not be brought outside the anus as in ordinary cases. A strong and sharp-pointed bistoury was then passed along the director until it could be felt in the bowel, when it was pressed into a piece of pine-stick to prevent doing any damage. The knife and stick were then drawn out at the same time, dividing all tissues between them. (See Fig. 42.) A short sinus running at right angles to the main one was found and divided. Thus all the sinuses were made to communicate with each other.

When all the sinuses had been divided, they were curetted and Salmon's back-cut made along the back of each one. After this they were irrigated with a solution of bichloride and tightly packed with iodoform gauze and cotton, and the patient ordered to bed with instructions to have an hypodermatic of one-fourth grain of morphine, in case he suffered much pain the first night. The dressings were not changed until the second day, when they were replaced. The only difference in the dressing was that the gauze was placed loosely in the bottom of the sinus, for there was no fear of hemorrhage after the first twenty-four hours. The dressings were changed every other day for three weeks, at the end of which time all the sinuses were completely healed, and the patient returned to his home happy. I received a letter some months later saying that he was entirely well.

Case VIII.—Blind Internal Fistula.

A lady was sent to me from Kansas to be treated for some rectal trouble with the following symptoms: She said she had been constipated for several years; did not have more than two actions a week; and then strong purgatives were used. She was very nervous, and suffered almost constant pain in the rectum, which was very much worse during and after defecation. The pains were sometimes reflected up the back and down the limbs. There was no bleeding at any time, and very little discharge; once or twice there had been a small amount of pus on the feces. On examination the rectum and anus seemed perfectly healthy, except that the sphincter was tightly contracted and very much thickened. I came to the conclusion that her trouble was due largely to constipation, the result of the feces becoming impacted and pressing upon the nerves, causing a reflex spasm of the sphincter muscle that was largely responsible for the pain. Divulsion was decided upon and done thoroughly; a large-sized Pratt speculum was introduced and a careful examination made, which revealed the presence of a small, inflamed area about one inch (2.54 centimetres) above the anus. In the centre was a little pocket formed by the transverse folds of the mucous membrane. A small probe was selected and pressed first on one place and then on another until an opening was found. The probe passed beneath the

membrane and downward toward the surface until its point could be felt about one inch backward and a little to the left of the anus. The author's angular groove director was then made to take the place of the probe and was pressed against the skin. An incision was made over the point, and it was forced through the skin and all the tissues thereon divided. The wound was treated as after an ordinary operation for complete fistula, and the patient was perfectly well at the end of three weeks. I report this case simply because it shows just how easily we may be mistaken in our diagnosis unless we use extraordinary care in making an examination, even when chloroform is used for that purpose.

CHAPTER XI.

THE RELATION OF PULMONARY TUBERCULOSIS TO FISTULA.

This subject is one of much importance and is deserving of special and separate consideration, for any surgeon who operates frequently for *fistula in ano* will notice the frequency of phthisis as a complication. Then the questions arise: Ought we to operate on such cases? If we operate on some of them, what signs or symptoms must be our guide in selecting cases that are likely to improve after the operation? These questions are difficult ones to answer, for it is not easy to draw the line between those that are and those that are not fit subjects for operation; yet by making a special study of each case it can be done, as we will attempt to show farther on in this chapter. There has been much difference of opinion as to the relative frequency of one of these diseases to the other. Probably from 4 to 6 per cent. of all phthisical patients have fistula, while a much larger percentage of those afflicted with fistula have phthisis,—namely, from 12 to 15 per cent. It has been our lot to meet a large number of cases of fistula complicated with phthisis during the last few years, and we do not hesitate to say that they have worried us not a little. In tubercular ulceration we have two varieties,—one where the little tubercles can be located in the rectum about the ulcerated spots, while the other variety consists of a simple ulceration, in a debilitated patient afflicted with tuberculosis of the lungs. So we meet with two kinds of tubercular fistula,—one as a result of *localized tubercular ulceration* with or without any lung complication; the other, a fistula in persons who have lung trouble due to the absorption of fat about the ischia, general debility, and abscess. In the feces of the first variety can be found the tubercle bacilli of Koch, while in the second variety they cannot be found unless

sputum containing them has been swallowed and *gastric digestion* has been impaired to such an extent as not to destroy them or their spores.

Symptoms.—The patient's general appearance, the symptoms and local changes of one afflicted with a tubercular fistula are so distinctly different from the ordinary fistula that a surgeon who has seen one case will have no difficulty in diagnosticating another. A person thus afflicted will be run down in general health and have a sallow complexion. Many of them are annoyed by a cough. The anus will be found patulous and surrounded and almost hidden by an abundance of long, silky hairs; the ischio-rectal fossæ are apparently drawn in, owing to the absorption of fat; the external opening of the fistula is large and irregular in shape, and the skin surrounding it is of a bluish tint, and the edges droop down into the opening. On passing the finger or probe into this opening it can be made to sweep around in almost any direction for an inch or so beneath the undermined skin. At the same time it will be observed that the fistula has not burrowed deeply. On passing the finger into the bowel the internal opening will be located, usually within an inch of the anus, and it, like the external, is large and the edges irregular. These patients have little pain except from excoriations. Not infrequently the destructive process has been so extensive that the finger can be pressed through the external opening and into the bowel with ease. The discharge is usually abundant, thin, and watery. What a *contrast* to the ordinary fistula with its small openings, tight sphincter, rounded buttocks, increased pain, etc.!

Treatment.—Having mentioned some of the most important diagnostic features, we will proceed to the treatment, which in a large measure should be operative. Now and then, however, we find a case that we can at least make comfortable or even effect a cure by less radical treatment. Now to the important questions put in the beginning of this chapter: "Ought we to operate? If so, on what class of cases?"

These questions have been studied and discussed as frequently as almost any other subject connected with rectal surgery, and yet no definite conclusions have been reached. Some high in authority believe that we should not operate on this variety of fistula under any consideration; others equally high claim that we should. Recent writers on this subject, however, especially those who are doing a large amount of rectal surgery, look more favorably on operative procedure than did the earlier writers. The reasons given for non-operative interference have been vague in many respects. Some say not to operate, for the wound will not heal; others, that if we operate, the lung trouble, when present, will be aggravated and the patient will die; and, in cases where no lung trouble has developed, if the sinus is healed there will be no outlet for the discharge, and, in consequence, a lung trouble will be produced. There is some excuse for the first assertion, for it cannot be denied that occasionally a tubercular fistula refuses to heal, and, further, that they all heal much more slowly—due to the cough and low vitality—than an ordinary fistula. At the same time we have witnessed many favorable results in our own practice as a result of operative procedure. The other reason for not operating—namely, that the lung complication will be increased as a result of the arrest of an unhealthy discharge—has no foundation. The quicker such reasoning is done away with, the better it will be for these sufferers. We know that there is no intimate anatomical relationship between the lungs and the anus or the tissues immediately surrounding it, and just why the arresting of a destructive process in the one should affect the other is not sufficiently apparent of itself to condemn operative procedure.

We are justified, then, in operating on all those patients suffering from a *tubercular fistula* in its *strictest* sense, and also those who have a simple fistula with *lung complications*, provided the patient's general condition will permit it. It is the *condition* of the patient at the time we are consulted that should

decide this question, and not the fact that the patient may have a localized tuberculosis, either in the anal region, lungs, or both. We desire very much to emphasize this fact, for we have seen many patients who suffered for years and would not submit to an operation because they had been told by some one that, because they had a predisposition to phthisis, if the fistula were healed they would die of lung trouble. It is not an easy matter to lay down a given rule to go by in the selection of cases whose condition would be improved after an operation. It is safe to say, however, that we certainly should not operate on patients we know to have *acute phthisis*,—that is, where the lung trouble is of recent date and is progressing rapidly. When the patient is emaciated, has shortness of breath, night-sweats, almost constant coughing, etc., he will in all probability die in a few weeks of the lung trouble. An operation would only cause him more suffering and the sinus would not heal, owing to the constant and rapid lowering of vitality. In such a case all we can do is to use cleanliness, soothing lotions, and ointments to make him comfortable while he does live. To clean and stimulate the wound any of the ordinary antiseptic solutions—such as Condy's fluid, carbolic acid, and bichloride—will do as well as any after the sinus has been syringed out with the peroxide of hydrogen. In addition, codliver-oil, creasote, and tonics should be prescribed to build up the system in general. In spite of anything that can be done, many of these patients will not improve in the slightest, but will rapidly decline until death claims them. On the other hand, we are justified in operating on *all cases* that have phthisis where the destructive process is *slow* and where the fistula is causing some *pain*, lowering vitality, and causing *much mental worry* as a result of the constant and profuse discharge. It cannot be denied that many who have had fistula and tuberculosis of the lungs have recovered. Knowing this to be a fact, and that the discharge from a fistulous tract is very exhausting to both mind and body, we should operate and endeavor to stop this great drain upon

the system and thereby immediately help the *lung trouble*. It is much easier for nature, assisted by us, to take care of one destructive process than two, as was the case previous to the operation. When it has been decided that the case under advisement is one suited for an operation, there are many precautions to be taken before and after the operation. In the first place the patient's general health should be improved as far as possible by tonics and nourishing diet. such as milk in large quantities, eggs, pure beef-juice, rich soups, etc. Not infrequently a little trip to the sea-side will prove beneficial, both from the sea-breeze and the change of scenery. The bowels should be moved, the rectum washed out, and the patient is ready for the operation.

As regards the anesthetic to be used, *chloroform* should always be selected when lung trouble is present, unless there be some marked contra-indication, for ether has a tendency to irritate the air-passages and cause an increased secretion of mucus in the same. From personal experience we have been led to believe that many of the deaths following operations on this class of fistula have resulted from *inflammation* of the lungs induced by the *administration of ether*, and not as a result of the *cutting* or closure of the fistulous sinuses. Chloroform rarely ever causes any irritation of the air-passages. The operation differs slightly from that for ordinary fistula in that it should be performed quickly and in such a way as to have little bleeding, as the amount of blood lost to these patients is of vast importance. Caution should be used not to incise the sphincters too freely, especially the internal sphincter, owing to low vitality. When they are cut once, incontinence may follow; and if they are cut two or more times, incontinence will *certainly* follow. After the sinus has been laid open it should be curetted and the skin along its edges trimmed. The wound should be packed and the patient immediately placed in a warm bed and surrounded with hot bottles and given stimulants if there is any tendency to shock.

After-Treatment.—The patient should not be allowed to stay in bed after the third day, but must be made to get up and lie on a lounge, near a window, where he may have the full benefit of the sun. Just as soon as the weather and his condition will permit, he should be required to spend most of his time out in the *fresh air* sitting about. Unless his hygienic surroundings are looked after, the operation is likely to prove a failure. The wound requires the same kind of treatment as that of an ordinary fistula. All tonics and nourishments that proved beneficial in building the patient up previous to the operation should be continued afterward until he is in a fair way to recover. There is one more point connected with the after-treatment that we desire to mention before closing this chapter,—namely, that it is not well to have the bowels move oftener than every third or fourth day, for the frequent use of purgatives may be the means of starting a diarrhea that will be difficult to arrest, which exhausts the patient very quickly and delays healing from the irritating discharges passing over the wound.

ILLUSTRATIVE CASES.

Case IX.—Tubercular Fistula.

Mr. P. was referred to me by Dr. Chassagne, of Kansas City, who had been treating him for phthisis. Two months prior to the time he came to me a large abscess formed on the right buttock, burst, and a fistula was formed from which large quantities of a thin-looking pus was discharged. He suffered much pain, was weak and almost exhausted. He had the ordinary symptoms of phthisis,—hemorrhages, cough, and night-sweats. On examination the upper portions of both lungs were found to be involved. An operation was decided upon and I determined to try the elastic ligature, as used by Mr. Allingham, so that there would be no blood lost and he would not be confined to his bed. Both the external and internal openings being large, a probe, threaded and stitched to the rubber ligature, was easily passed through the external opening into the rectum and brought out at the anus, thus including all the tissues to be divided. The ligature was then made taut and the ends were passed through a piece of lead with an opening in the centre. By the aid of strong forceps the lead was pressed together and the ligature

made secure. The whole procedure did not take more than five minutes and caused very little pain. Tonics and nutritious food were ordered and he was told to spend all his time in the fresh air when the weather would permit. In two weeks the ligature cut its way out and left a healthy, granulating sinus, which was dressed as after the ordinary operation for fistula. In two months from the time he came to me for treatment the fistula was well and he had improved very much in general health.

Case X.—Tubercular Fistula.

Mr. J. C., aged 27, referred to me from the country, was suffering from chronic phthisis and from a *fistula in ano*, the latter annoying him very much. The discharge was very profuse and kept the surrounding parts irritated all the time. On examination it was found to be complete; the external opening was large and to the left, and one inch (2.54 centimetres) below the anus; the opening in the bowel was between the external and internal sphincter muscles. The patient was emaciated, coughed considerably, and now and then had night-sweats. He had been suffering from lung trouble for one year, but there was no evidence that he would die from the lung complication for a long time; consequently, I decided on the ordinary operation for complete fistula. The sinus was divided, curetted, and all of the undermined skin trimmed off with scissors. The usual dressings were then applied and the patient put to bed and surrounded by hot bottles. There was very little shock, and on the following morning the patient expressed himself as feeling better than he had for weeks. From this time on there was no increase in the lung trouble. He was requested to lie on a lounge in the sunshine daily after the dressings had been changed until the end of ten days; after which time he was allowed to spend most of his time in the park. Tonics and creasote were given, and at the end of six weeks the sinus had completely healed. I advised him to go to El Paso, Texas, for a few months, which he did. At the end of a year he returned home much improved in general health and informed me that the fistula was entirely well.

CHAPTER XII.

INCONTINENCE OF FECES.

It is difficult to conceive of any more serious accident that could follow any operation about the rectum than incontinence; for what could be more deplorable, cause more annoyance or mental worry than to lose all control of the bowel? Incontinence may be caused by either permanent or temporary paralysis. The latter condition is sometimes brought about as a result of some local irritation within the rectum, that excites and keeps up a constant spasmodic contraction and relaxation of the sphincter until it becomes tired out and remains passive. Incontinence may be caused by ulceration, benign or malignant, where one or both sphincters have been destroyed. Again, it may be the result of any operation about the anus where it is necessary to divide the sphincter muscles one or more times. In all operations for complete fistula this is necessary; hence, incontinence will follow *operations* for *fistula in ano* more frequently than for any other disease. After operations for fistula, patients are frequently unnecessarily alarmed because of their inability to retain wind and liquid feces. This lack of sphincteric power may last for several weeks, until the sinus has entirely healed and the cut muscles are reunited. It is well to inform patients about to be operated on that they will probably not have perfect control of the bowel for a few weeks, and that now and then permanent incontinence follows the operation, but that all who hope to get well must take this risk. Permanent incontinence occurs more frequently in women than in men, and is almost certain to follow an operation where the sphincter has been severed at its junction with the sphincter vaginæ, for it then has no fixed point above; consequently, it will be unable to contract sufficiently to completely close the anus, and the feces, when fluid, will constantly leak out at that

point. It is more apt to follow operations where the incisions have been carried high up the bowel, above the internal sphincter, than where they do not go higher than one inch above the anus. It is also more apt to follow where the muscles have been divided obliquely than at right angles, and where the muscles have been cut two or more times. Sometimes the muscles may be severed several times and incontinence will not follow; on the other hand, it has been known to follow an operation where the external sphincter alone had been cut. Why incontinence follows a comparatively trivial operation in one case, while in

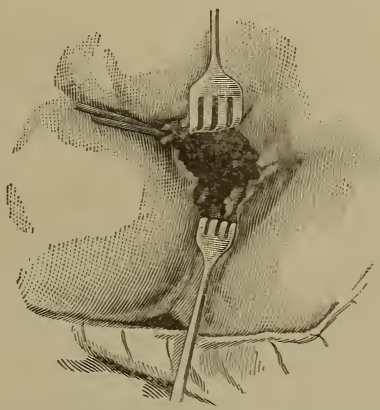

Fig. 43.—Appearance of the Anus where the Sphincter was Cut in Three Places in a Girl who Recovered Perfect Control of the Bowel in Six Weeks.

another much more cutting is done (see Fig. 43), yet the patient will have perfect control of the bowel, has been the subject of much study. Explanations have been brought forward by prominent surgeons. Kelsey thinks the explanation lies in the fact of vicious cicatrization, by which the ends of divided muscles are not brought into accurate apposition. If this is true, it explains why a single cut may cause incontinence; the ends of the muscle being separated by a cicatrix for a variable distance, the muscle has no fixed point of support and loses its power. In another case it may have been divided in several places and afterward have healed in such a way as to leave the

segments of muscle united as one undivided circle, without being followed by incontinence. Another thinks the incontinence is the direct result of dividing the nerves supplying the muscle. It is not of so much interest to us to know how or why incontinence occurs as to be able to correct it. There is no other operation in rectal surgery that will prove more gratifying to both patient and surgeon than that for incontinence when successfully performed. A patient, once relieved of this deplorable condition, never ceases lauding the one who did it.

Treatment.

Incontinence may be cured in two ways,—first, by cauterization; second, by plastic operations similar to those for repairing a lacerated perineum in women. It is always essential to tell the patient that you may not be able to cure him by the first operation; but it may require two or more, and take several weeks or even months to bring about the desired results. If the patient will only put himself in our hands until we are ready to discharge him, we can promise material help, if not an entire cure.

Cauterization.—Cauterization for the cure of incontinence comes highly recommended from all writers on the subject. We have always found the Paquelin cautery to be all that could be desired. The extent to which it should be applied is dependent upon the nature of the incontinence—that is, whether it is partial or complete—and on the condition of the anus. After removing any piles, tabs of skin, etc., that might be present, the cautery-point at the dull-red heat should be applied to both external and internal sphincter muscles in four or five places (see case) at an equal distance apart. We have been in the habit of pressing the cautery almost through the entire depth of muscles to insure decided contraction. Then it is pressed deeply into the tissues at the junction of the skin and mucous membrane in three or four places; this insures a marked contraction at the anus. If after the first application sufficient contraction does not

follow, cauterization should be repeated. The operations should be at least two months apart, for sometimes the contraction takes place slowly. It is surprising how much contraction will follow a comparatively slight cauterization, and the relief thus afforded is very great.

Plastic Operation.—The simplest manner of operating is to cut the muscle at a right angle at its weakest point; the ends of the muscle on either side of the incision are then seized, freshened, and brought into accurate apposition by silk-worm or catgut sutures, and dressed with antiseptic dressing. If the operation prove a success, they will unite by first intention in a few days. In fact, the anus can be made just as small as the operator desires by additional sutures. In all cases where the ends of the muscle can be united the results will be good. In simple cases the plastic operation is preferable, because it effects a cure in a few days, and there will not be any abnormal contraction. In severe cases where scar-tissue is abundant and the anus is wide open all the time, the cautery applied as previously described gives the best results; for when such a condition exists one could scarcely expect to get union by first intention, owing to tension on the sutures and impaired circulation in and about the scar-tissue. In cases of incontinence due to malignant disease, ulceration, and paralysis, the indications for treatment are the same as if it had occurred after simple operation. In addition to the surgical treatment, constitutional remedies must be prescribed for those who are anemic and debilitated.

ILLUSTRATIVE CASE.

CASE XI.—INCONTINENCE DUE TO RUPTURE OF SPHINCTER MUSCLE.

A few months past Mrs. B. was referred to me to be treated for total incontinence, and she gave the following history: She was 30 years old, and had never been sick a day in her life until two years ago. Then she had a pain in the region of the tubes and ovaries. She consulted a prominent physician of our city, who removed the offending organs. After she had recovered from the immediate effects of the operation, he informed her that she had piles—which was news to her—and that she

must have the rectum stretched. Believing this essential, she consented, and was again anesthetized and the operation performed. In due time the abdominal wound healed and she was discharged. She returned to her home to assume her household duties. During this time she had no control of the bowels, and the feces passed out as quickly as they entered the rectum, which was very annoying and necessitated the wearing of a napkin constantly. The surgeon was consulted, and he replied that the muscle would regain its power in a few weeks; but it did not, and, as the weeks and months rolled by and no improvement was noticeable, she insisted on something's being done. He at last endeavored to repair the injury by a plastic operation similar to that used for the repair of the perineum. It was a failure, as were the two subsequent ones performed several months apart. At this time the patient decided to try some one else, and was referred to me. Examination revealed the presence of many scars in the anal region and complete loss of sphincteric power. I told her of the state of affairs, and said I believed that she could be benefited very much and possibly cured, as far as the leakage was concerned, if she would place herself absolutely in my hands until she was discharged. She readily consented, for life was simply unbearable in her then condition. Two days later I operated at All-Saints Hospital, before the members of the post-graduate class, after the following manner: She was placed in the lithotomy position with the limbs well flexed upon the abdomen. A large bivalve speculum was introduced and the rectum irrigated, after which it was wiped perfectly dry. With the Paquelin cautery-point I made a number of deep linear burns into the rectal wall, about three quarters of an inch (1.8 centimetres) apart, beginning at the upper margin of the internal sphincter muscle and terminating in the skin just without the external sphincter. Strips of iodoform gauze were smeared over with vaselin and placed in the rectum to keep the walls apart. Three days afterward the gauze was removed, the rectum irrigated, and fresh gauze replaced. The rectum was dressed in the same way for three weeks, when she was discharged from the hospital able to retain solid feces. I informed her that the contraction would be more in several weeks, but that it was possible that another operation might be required, and for her to come to the office from time to time. Last month I saw her, nine months from the time she left the hospital, and she could retain liquids and solids without any difficulty, and was very grateful for the services rendered her. I have reported this case at length, because it shows how easily incontinence may be produced, and to point out the most satisfactory way of relieving it.

CHAPTER XIII.

FISSURE AND PAINFUL ULCER.

That fissure of the anus is a very common affliction none can deny, for we are all familiar with a large number of people who suffer from it. We all know how common constipation is, and it has been observed that constipation is the most potent cause of fissure. In fact a very large percentage, if not all, who suffer from constipation have had or will have a fissure at some period of their existence. It is necessary to impress this fact so that the attention of both the physicians and the laity may be drawn to this subject, that they may be on the lookout for this common evil and at once recognize it. It is a condition that can be easily and speedily corrected. Fissure has been written and talked about since the time of the ancients to the present day, sometimes under one name, sometimes under another, but it did not receive that special consideration it so much deserved until about sixty years ago, when M. Boyer gave it his special attention, he having had a large experience in the treatment of this disease in its various forms. He would lead us to believe that all cases of fissure are accompanied by a painful anal spasm of the sphincter ani muscle, and that this painful contraction in reality constitutes the disease, whether attended by a rent in the mucous membrane or not, and that the disease is not in the mucous membrane itself, but that it is in the sphincter muscle alone. Bodenhamer, in his most excellent and exhaustive work on "Anal Fissure," says that the ancients, when speaking of fissure, did not mention anal spasm, and, further, that while M. Boyer's friends claim for him the distinction of being the first to point out that anal spasm always accompanied anal fissure, they are mistaken. Nearly three hundred years previous to his time the celebrated French surgeon, Ambrose Paré, in describing fissure, said it was attended

by great contraction and narrowing of the anus. Great credit, however, is due M. Boyer, for he did all he could to show the importance and frequency of this disease. We cannot concur in his belief that the disease is in the muscle primarily, and not in the mucous membrane. He admits that the membrane may or may not be diseased. It is our opinion that the spasmodic contraction of the sphincter ani is a secondary matter, due to an irritation arising from a localized diseased condition of the mucous membrane near the anal margin. That there is more or less spasmodic contraction of the sphincter ani accompanying every case of fissure of long standing cannot be disputed, and, further, that there may be a spasmodic contraction of the sphincter without a rent in the mucous membrane is equally true, due to some other pathological conditions of the rectum and anus, or from reflex action as a result of an irritation set up by some neighboring organ. Therefore, we are not justified in saying we have a *fissure in ano* simply because there might be a spasmodic contraction of the sphincter muscles, as M. Boyer teaches.

There are other authors who, like M. Boyer, believe that spasmodic contraction of the sphincter ani is an idiopathic disease of itself, not dependent upon any rent or erosion that might or might not be present, and constitutes the condition described as *fissure in ano*. Others equally high in authority take an opposite view. They believe that the spasmodic contraction of the sphincter is not the prime factor, but a secondary one in the disease, and that the contraction is directly due to an irritation caused by some rent or irritation at the margin of the anus or lower portion of the rectum. The former claim that the rent is present by accident or is produced by the spasmodic contraction; while the latter, as previously stated, think the contraction is secondary to the rent. We are inclined to believe that the latter gentlemen are right, for in a large number of cases that we have treated we have frequently seen a rent in the bowel when there was no sphincteric contraction. Later on, however,

the rent or fissure would become irritated from some one of a number of causes, and *contraction* of the muscle would then follow, and, as a rule, would continue until the fissure was cured. Whenever this spasmodic contraction commences, the irritation of the fissure is increased and the pain becomes almost unbearable. Knowing this, we might very well divide this disease into *two stages*,—first and second. The *first stage* commences at the time the rent in the mucous membrane is made and continues until the fissure becomes irritated and induces muscular *spasmodic contraction*, which marks the beginning of the *second stage* and is also the pathognomonic sign of an irritable fissure. In the first stage there will be a slight itching, but very little pain; while in the second stage the pain is very greatly increased.

It will be observed that this chapter is headed "Fissure and Painful Ulcer." We have chosen this heading because we believe that the term *fissure* by itself would not give a correct idea of certain conditions described in this chapter which have been heretofore denominated *fissures*. A simple fissure, cleft, rent, or crack, whichever you choose to call it, may from certain causes become enlarged and circular or oblong in shape with roughened edges, losing all its former characteristics except, perhaps, its irritability; then, according to our conception, it is no longer a simple fissure, but simply an irritable ulcer. An ulcer may start as such from the beginning, never at any time having the appearance of a fissure. The symptoms of these two conditions are the same, the only difference being in their shape. In fissure there is simply a narrow, elongated rent in the mucous membrane at or near its junction with the skin, the edges of which are on a level and in contact with each other unless kept apart by a small fecal mass. On the other hand, the ulcer will be circular or irregular in shape, with rounded or raised edges and of variable size. If there is any difference in location, it is that the fissure is found more frequently near the anal margin than is the ulcer. The following remarks treat of

these two conditions as if they were one, the symptomatology and treatment being practically the same. In order to avoid confusion we will use the term *painful ulcer* in speaking of them.

Etiology of Painful Ulcer.

The causes of painful ulcer of the rectum are many, and the most common of these is constipation. By careful observation it at once becomes apparent why this is, for we all know how delicate the mucous membrane is and how readily it tears; how easy it is for a rent to be made in the same, when an action has been deferred for some time and the feces have become so hardened that great straining is required to expel the fecal mass. The rent may be caused by the mucous membrane's being scratched by some hard substance in the concreta or from the stretching of the same by a large knotty mass while passing through the sphincter. Again, constipation may cause an ulcer from pressure when the mass has collected in the rectum and remained there for any great period. We have observed this frequently in cases of impaction. Then, again, may not the mucous membrane be irritated from certain irritant substances to be found in retained feces? On the other hand, we may have an ulcer caused by diarrheal or dysenteric discharges because of their irritating qualities. Ulcers are found more frequently in women than in men, probably because more of them suffer from constipation. Comparatively few children suffer from this complaint unless there has been a narrowing of the anus; yet it has been our privilege to see three cases in children as a result of severe straining during an attack of constipation. Dr. Daniel Morton believes that fissures are frequently produced in children who suffer from constipation. Certain diseased conditions of the uterus, bladder, or prostate that induce straining, and injuries to the rectum by foreign bodies swallowed or introduced from below,—such as pins and fish-bones,—or the careless introduction of the nozzle of a syringe, may be causes. Any morbid growths—such as piles, polypi, malignant disease, etc.—

that induce straining or cause an irritating discharge may be put down as causes. The same might be said of any skin or venereal disease situated about the lower end of the rectum or immediately without the anus, such as eczema and vegetating warts. Hypertrophied tags of skin and external piles are frequent causes. In fact, painful ulcers have been found so frequently within the folds of an external pile that such a *pile* has been designated a *sentinel pile*. Surgical operations for the cure of hemorrhoids may be the cause of a painful ulcer where the wound refuses to heal. There are certain conditions that sometimes produce a painful ulcer, and, at the same time, may be the cause of some other pathological condition about the rectum, which necessitates a careful examination in order that the treatment may be successfully carried out.

Symptoms.

A painful ulcer is ordinarily found in those who suffer only from it and constipation, brought on by an in-door life and irregular habits. This disease, we think, causes more severe pain, reflex manifestations, and mental worry than any other disease that we are likely to be afflicted with, where the pathological condition of the parts afflicted is of such slight moment. We have, in a large number of cases, seen stout and apparently healthy men entirely incapacitated for their usual duties, as the result of a slight rent in the mucous membrane the thickness of a pin and not more than half an inch (1.27 centimetres) in length. This, of course, is after the ulcer has become irritated and spasm of the sphincter inaugurated. The symptoms, however, are usually characteristic in spite of the fact that the patient insists that he has the piles.

Pain.—The pain is *paroxysmal*, is very severe, comes on during the act of defecation, and lasts during the same and for a variable length of time afterward. In one case it may last only a few moments, while in another it will last for half a day and exhaust the patient very much; for this reason persons

who are aware that they have this painful condition will postpone going to stool as long as they can; then, when an action does take place, it is something fearful on account of the size, shape, and compactness of the feces. The pain is described as being of a *severe*, *smarting*, *tearing* character, and is often reflected to the coccyx, perineum, pelvis, up the back, or down the limbs to the toes. It is not an uncommon thing for a man afflicted with painful ulcer to complain of pain in the heel or toe during defecation. The after-pain is kept up and made more severe by the spasmodic contraction of the sphincter, which may last from a moment to many hours. Frequently the patient will not suffer between stools, for the pain is rarely constant. The pain, while it lasts, is so severe that patients easily fall into the habit of taking an hypodermatic injection of morphine or some narcotic just previous to going to stool to obviate the after-pains, and may become slaves to drugs. For this reason the promiscuous administering of drugs for the relief of pain cannot be too *severely criticized*.

Bleeding from painful ulcers varies very much. Some do not bleed at all; others, very slightly,—that is, on examination, the expelled fecal mass will be found to be streaked with blood; while still others bleed profusely, even until they faint. The bleeding may not last long or it may last many hours. Patients have informed me that they have been obliged to go about their daily vocation with blood trickling down their legs, because they did not have time to wait until it stopped.

Flatulence is a frequent symptom. Bodenhamer says he never saw a severe case in which it was not present to a greater or less extent, dependent sometimes upon the length of time since the bowel was emptied, for it is not an unusual thing for the bowels not to move oftener than once a week unless an injection or purgatives are prescribed to soften the stool.

When the ulcer is of long standing and the suffering has been severe, patients thus afflicted become very nervous and imagine they have a cancer or some other serious disease; their

features are pinched, indicating suffering, and in some cases they become physical and mental wrecks.

Physical Exploration.

Preparatory to an examination, the bowels should be unloaded by means of a mild purgative, followed by a copious injection of warm water and Castile soap. It is optional with the surgeon as to the proper position; either the Sims or the lithotomy position is good. Frequently the fissure can be located without causing much pain by placing a small piece of cotton saturated with a 6-per-cent. solution of cocaine within the anus and leaving it there for a few moments. It is always desirable to make the examination under the influence of an anesthetic, if the patient will consent, for it can and will be made more thoroughly than it otherwise would be when the patient is squirming around and telling us how badly we are hurting him. It enables one to diagnosticate other complications that may be the cause of the ulcer situated high up in the rectum. With a good light and with the nates well separated by an assistant, any external abnormality will be readily detected. When a fissure is present the sphincter is nearly always markedly contracted, so much so in some cases that the anus is *funnel-shaped*,—a condition similar to that described by French surgeons as being present in those guilty of *sodomy*, which is said to be very common and on the increase in their country.

Sometimes some skin disease that may be the cause will be detected. Painful ulcers about the anus are not uncommon in young children who have inherited syphilis. We well remember seeing at the dispensary three little girls who were, respectively, 2, 5, and 8 years old, born of syphilitic parents, who had these ulcers to a distressing degree, as well as other manifestations of this loathsome disease. If there is any external pathognomonic sign of an ulcer, it is to be found in the little *external pile* which marks its location and not infrequently hides the fissure within its folds. We have previously designated this a *sentinel pile*.

Sometimes the ulcer can be easily located, for the lower end comes into view at the muco-cutaneous junction. (See plate.) At other times the surgeon will have a chance to display all his ingenuity ere it is located. When external examination fails to reveal its presence, it will be necessary to resort to a digital or specular examination. The latter will be preferable, in the majority of cases, for it is not an easy thing to diagnose an ulcer by its touch unless the finger is well trained; then only a slight roughness will be felt. With the speculum properly introduced the parts come into view and are made tense, and any fissure or ulcer that might be present must come into view. We prefer a simple bivalved speculum (see Fig. 6), which in shape resembles the index finger. In nearly every instance the ulcer will be located on the posterior surface and in the lower third of the rectum, frequently just above or within the grasp of the external sphincter, though in exceptional cases it may be found on any side and in any part of the rectum. When we have an intimation, from what the patient tells us, that the fissure is located on a certain side of the bowel, care should be used to make pressure against the *opposite side* with the speculum or finger when introduced into the rectum, and by so doing much suffering can be avoided. Painful ulcers are usually single, though at times they are multiple. They will ordinarily appear as small cracks in the mucous membrane, which rarely ever extend through its entire depth unless the case is one of long standing. (See Plate VIII.) They are exceedingly sensitive; only slight pressure on them with the finger causes the most intense pain, which not infrequently lasts for a considerable time after the examination has been completed. As the external pile is the outer *sentinel* for an ulcer and its location, so we have an internal *sentinel* which does the same when the fissure is above the external sphincter. It is a *teat*, or *polypoid-like growth* (see Plate IX), the end of which is always white and pointed. It readily presents itself when the speculum has been introduced, and at its base the ulcer will be located.

PLATE VIII - PAINFUL ULCER (FISSURE) OF THE ANUS.

Burk & McFetridge Co. lith. Phila.

In cases of extensive ulceration these *teats* are sometimes very large, are multiple, and can be easily detected by digital and visual examination. After an ulcer has once been located, it should be probed to see if its edges are undermined and to find out if it has an internal, blind, fistulous opening concealed within it, for such a condition not infrequently is present.

Diagnosis.

In a very large percentage of persons afflicted with painful ulcers the diagnosis can be made with very little difficulty, though in an ordinary case the examination should be both visual and digital. In spite of this, many of these cases have been mistaken for other conditions by reputable physicians as well as by the laity. Amongst those diseases for which painful ulcer is most liable to be mistaken we will mention:—

1. Hemorrhoids.
2. Neuralgia of anus.
3. Spasmodic sphincteric contraction from any cause.
4. Blind internal fistula.
5. Disease of neighboring organs.

Hemorrhoids.—We have treated many cases of painful ulcer of the rectum that had for months been treated for piles, when no tumor could be found. Such mistakes are the result of a superficial examination or of gross ignorance, for the two conditions are unlike in almost every respect. On inquiry of the patient as to the kind of an examination he had been given, he not infrequently answered my questions by saying that he told the doctor that he was suffering from piles, and that the doctor prescribed for him without making any examination whatever. This in part explains to us why persons suffer for years with painful ulcers, when they should have been well within three weeks, at the farthest, from the time when the treatment was begun.

Neuralgia of the anus may be mistaken for painful ulcer. In fact, the symptoms of the two diseases are so similar that any one may get them confused unless a thorough examination

is made; then the diagnosis can be cleared up beyond the *possibility* of a doubt, for, when the pain is due to neuralgia, it will be more general and the mucous membrane will be perfectly healthy. On the other hand, when the suffering is due to painful ulcer, there will be a break in the mucous membrane. Such a rent is easily discernible, and when pressure is made at that point the pain will be very intense.

Spasmodic sphincteric contraction, from whatever cause, is frequently mistaken for painful ulcer. We know this to be a fact, and have frequently seen it demonstrated by physicians who, in making an examination, would observe that the sphincter was tightly contracted and would almost invariably come to the conclusion that the patient had a fissure; but further examination failed to reveal the presence of any rent in the mucous membrane. Not infrequently, in chronic constipation, the sphincter takes on this spasmodic contraction, and, when it has continued for a considerable time, the muscles become hypertrophied.

Blind internal fistula is quite likely to be mistaken for painful ulcer, especially when the opening is well within the sphincter; sometimes both are present in the same case, and within the fissure may be hidden the fistulous opening. When a fistulous opening becomes very small or is obstructed, much acute pain and spasmodic irritation will ensue. At this juncture, unless a diligent search is made and the sinus located, the case is quite likely to be diagnosed as painful ulcer and treated accordingly. This mistake subjects the patient to a long course of treatment, which fails in the end. A careful probing of any little rent or depression in the mucous membrane with a very fine probe will detect any fistulous sinus that might be present and prevent any such mistake.

Disease of Neighboring Organs.—The reflex symptoms of a painful ulcer are many and varied, as a result of pain reflected to different organs in the pelvis. They are sometimes treated for some diseased condition when the real seat of disease

is a small ulcer in the rectum. The relations existing between the rectum, uterus, bladder, and prostate are very close; and a study of the reflexes when one or the other of them is diseased is both important and interesting.

Prognosis.

Patients frequently ask if we can cure a painful ulcer. In reply to this question we can safely say that, if persons thus afflicted will place themselves in our hands and permit us to do with them as our judgment may direct, we can most certainly cure them, and in a few days or weeks at most. This reply, of course, has reference to uncomplicated cases only. If it should happen that the ulcer is only secondary to some other more *serious disease*, its cure will depend entirely upon the successful cure of the original disease. Unless the primary cause is first removed, even though we should succeed in curing the ulcer, it would, in all probability, return in a short time. Speaking in a general way, it may be said that the treatment of painful ulcer of the rectum will, in nearly every instance, be followed by speedy and gratifying results; yet, when left to heal of its own accord, and when improperly treated, it may remain indefinitely and cause so much pain and nervous disturbance as to entirely incapacitate the sufferer for the discharge of his daily avocations, while it sometimes makes complete nervous wrecks of women. They may even go from one physician to another and be treated for hysteria and other nervous phenomena.

Treatment of Painful Ulcer or Fissure.

Patients suffering from painful ulcer of the bowel do not consult their physician at the onset of the disease, but keep putting off going to the doctor from time to time for various reasons. Some think they will recover without medical aid and others do so because they dread an examination. It is very rare that a spontaneous cure takes place. As a rule, persons thus afflicted go on doing nothing or using some home remedies that

are said to have cured some neighbor until finally the pain becomes unbearable. The old saying, "a stitch in time saves nine," is applicable to the prevention and treatment of painful ulcer, for, when the surgeon's attention is called to a recent rent in the bowel, by ordering certain corrections of errors in habits and diet, together with cleanliness, it can be speedily cured. Knowing, as we do, that constipation, in a large percentage of the cases, is the direct cause, and when not the immediate cause that it is one of the symptoms, it at once becomes apparent that this condition must first be corrected, else the ulcer will not heal. For the relief of the constipated condition there are many things to take into consideration. First of all, highly-seasoned and stimulating foods should be discontinued and a thoroughly non-irritating diet substituted. Next, a daily movement of the bowel should be encouraged by the establishment of a regular time for going to stool; and, if this is not sufficient, a mild laxative or some one of the cathartic mineral waters may be prescribed. Strong purgatives are not indicated and should never be prescribed, for they produce much tenesmus and straining; and we have several times known them to start a diarrhea that was very difficult to manage. When the feces are impacted or become hard and nodular much suffering can be saved the patient by a copious enema of warm water and olive-oil or one of flaxseed-tea, which does not leave any very unpleasant after-effect and prevents the long-continued after-pain that follows the expulsion of hard lumps of fecal matter. In giving enemata much care should be used in the selection of a syringe with a smooth nozzle, which should be greased with some stiff lubricant and introduced slowly into the bowel and pressed against the rectal wall *opposite* the ulcer. In order to avoid trouble and to cause very little pain, we have been in the habit of attaching a very large soft-rubber male catheter to the syringe. This can be introduced with ease, and does not irritate the parts. While undergoing treatment for painful ulcer, patients should be requested to take very little exercise and

remain in the recumbent position as much as they can. The treatment of painful ulcer should be both palliative and operative, depending upon the state of the ulcer at the time it is seen.

PALLIATIVE TREATMENT.

The palliative treatment, outside of the precautionary measures previously alluded to, consists principally in topical applications of various kinds applied judiciously. Almost any recent ulcer can be cured by such applications. It is not advisable to continue these applications for a long period, for if they are going to be of any benefit the improvement can be noted within two weeks; and if there is not any in that time, operative interference is indicated. It is with gratification that we can say that a case of painful ulcer is, indeed, an exceptional one that does not get well after certain operative procedures, hereafter to be described, have been put into practice. Before using any application the fissure should be thoroughly cleansed with the peroxide of hydrogen or other antiseptic wash. Nitrate of silver 10 or 15 grains to distilled water 1 ounce we regard as the most useful application that we have. We have witnessed many cures from the use of this remedy, and it seldom requires to be applied more than half a dozen times, and in many cases not more than twice. Almost any of the astringent solutions will prove beneficial. The best ones are composed of zinc, lead, alum, the balsam of Peru, etc. In point of usefulness, the balsam comes next to silver. It causes less pain and the results are very good, indeed. Certain powders, either dry or made up in the form of an ointment, often prove soothing and stimulate healing. The most useful are: hydrarg. chlor. mite, ferri sulph., salicylate soda, bismuth. subnit. and subiodide, and the stearate of zinc with iodoform, balsam. ichthyol, etc. Any of these applications will cause considerable pain when the ulcer is very sensitive. The pain can be alleviated to some extent by saturating a piece of cotton in a 6-per-cent. solution of cocaine and placing it over the ulcer for a short time

previous to the application. The ether spray will also prove a good anesthetic. Suppositories, as made by the average druggist, should be condemned so far as the treatment of painful ulcer is concerned. It matters not of what they are composed, for it has been our experience that they are either very soft and difficult to introduce through the firmly-contracted sphincter or they are so firm that, when introduced within the anus, they come in contact with the oversensitive ulcer and act as a foreign body. The pain thus produced is very severe, and continues until the suppository is absorbed or expelled. In the meantime, as increased spasm of the muscle is induced in its efforts to expel the foreign body, the following ointment will prove quite soothing and will tend to diminish sphincteric contraction and thereby lessen the pain :—

℞ Morphinæ sulphatis, ... gr. ¼ (0.0162 gramme).
Ext. belladonnæ, ... gr ss (0.0324 gramme).
Vaselini, ... ʒj (4.00 c.cm.).

M. Sig. : Apply at once and repeat.

The following prescription is taken from Andrews.* We have used it in a number of cases and have always been well pleased with the results :—

℞ Iodoformi, ... ʒj (4.00 c.cm.).
Ungt. belladonnæ, ... ℥ss (15.00 grammes).
Acidi carbolici, ... gr. x (0.65 gramme).
Cosmolini, ... ℥ss (15.00 grammes).

M. Sig. : To be used daily.

One of the best dusting-powders that we have used is composed of

℞ Hydrargyri chloridi mite, ... ʒij (8 grammes).
Zinci stearatis cum balsami Peruviani, . ʒij (8 grammes).
Sodii salicylatis, ... ʒj (4 grammes).

M. Sig. : Dust over the ulcer daily.

In fact, any remedy that will prove stimulating to the ulcer and soothing to the sphincter will be a good one in the treatment of painful ulcer of the rectum.

* Andrews, Rectal and Anal Surgery. Third edition, p. 152.

OPERATIVE PROCEDURES.

The following operative procedures have their respective adherents. Any one of them may prove serviceable when the other has failed to effect a cure:—

1. Cauterization.
2. Dilatation.
3. Division.
4. Excision.

Cauterization.—Chemical caustics and the Paquelin cautery have both been commended and doubtless, in some instances, do much good. It has been our experience, however, that those cases which have resisted the treatment by astringents, cleanliness, etc., will do the same when cauterization is tried, and that many of them will not get well until rest of the sphincter is assured by either divulsion or incision. On the other hand, cases have been reported cured from the use of chemical caustics as well as the actual cautery.

Dilatation.—Either forcible or gradual dilatation of the sphincter goes a long way toward relieving the pain and effecting a cure in cases where all palliative means have been tried and found wanting. Bodenhamer, for whose opinion we have the greatest respect, thinks that gradual dilatation with graduated wax bougies is preferable to forcible divulsion of the muscle, and his results have been very good indeed. Most writers on the subject think that much time can be saved by immediate dilatation, and we concur in the latter belief. This can be done by first anesthetizing the patient; then the two thumbs or index fingers are inserted into the bowel and separated, first in one direction and then in another, as far as possible, care being used not to lacerate the mucous membrane nor tear the muscle. This should be practiced for five or ten minutes, when the anus will become patulous. The various mechanical dilators (see Figs. 53, 54) made for this purpose should be condemned, for they neither have eyes to *see* nor the sense of *touch* to guide them; consequently much harm may be done when they are used ere the operator is aware of it.

When the fingers are used any tear will be immediately felt and the direction of the pressure can be changed. *Divulsion* of the muscles proves beneficial in two ways. In the first place, as a result of the divulsion, immediate rest is obtained and all spasmodic sphincteric contraction ceases; and, in the second place, the oversensitiveness disappears, *supposedly* as a result of stretching the terminal nerve-filaments. In some cases an anesthetic will be contra-indicated. Then the dilatation can be effected gradually, and with comparatively little pain, by means of the hollow, graduated rubber bougies. (See Fig. 55.) It is better to commence with a small size,—say, a No. 8,—gradually

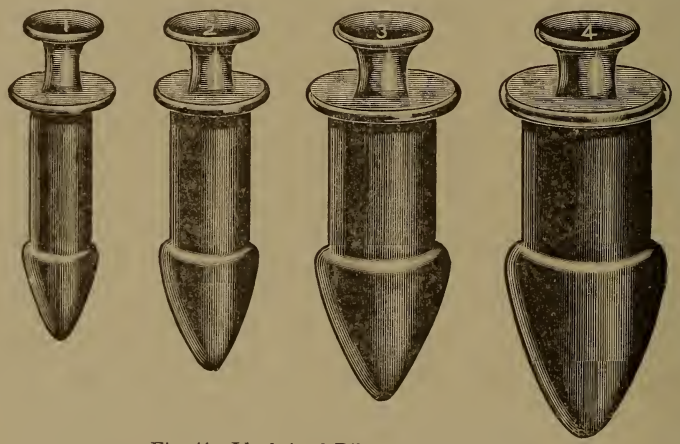

Fig. 44.—Ideal Anal Dilators. (Half size.)

increasing the size until a No. 12 can be easily introduced. It requires from ten days to two weeks to effectually dilate the sphincter by gradual dilatation. There is another form of rectal bougie that is used for dilating the sphincter muscles which is about two and one-half inches (6.4 centimetres) long, with a pointed knob on the end that causes it to be retained when grasped by the sphincter. (See Fig. 44.) They are to be had in various sizes, but have no advantage over the ordinary rubber ones. When rest is once obtained, the sphincter requires only two or three applications of nitrate of silver or balsam of Peru to effect a permanent cure.

Division.—M. Boyer was one of the earlier writers to advocate incising the sphincter for the cure of painful ulcer. His method was to divide the entire muscle. Mr. Copeland was the first to teach us that a superficial cut made through the depth of the mucous membrane and possibly a few of the muscular fibres just beneath the ulcer would prove quite as effective as the method of M. Boyer. When the fissure is situated at the margin of the anus the incision can be made by separating the anus with the fingers of the left hand, while the cut is made with the knife in the other. If it should be higher up, any speculum that will expose the ulcer will be of great service. The object in division is to obtain rest and healing from the bottom. The cut can be made with any ordinary blunt-pointed bistoury, but should not extend through the entire muscle unless it is an *unusually bad* case. A combination operation will prove valuable in some cases,—that is, after forcible dilatation the ulcer is incised. The danger of incontinence is naturally less after partial than complete division of the muscle.

Excision.—This operation is performed by making two elliptical incisions around the entire ulcer, through the mucous membrane. The diseased tissue is then removed. The edges of the wound left can be brought together with catgut sutures or left to heal by granulation. It will heal in a few days. This operation has no especial advantages over the method of incision, and, unless the sphincters have been previously divided, the results will not be so good.

AFTER-TREATMENT.

The after-treatment is much the same as that practiced after operations for fistula, in that it is best to place a piece of lint in the bottom of the fistula to insure healing from the bottom. It will not be necessary for the bowel to be emptied for three or four days after the operation. Then, if it does not act of its own accord, a dose of salts or a Seidlitz powder, followed up by a copious injection, will bring about the desired

movement. There is no indication for any medicine to relieve pain, for when the sphincter has been put to rest there will be very little pain. The ulcer should be cleansed daily with boiled, filtered water, peroxide of hydrogen, or other antiseptic solution, and touched up every three days with the nitrate of silver (gr. xv or xx to the ounce) or other astringent. This treatment and a few days' rest in bed will speedily and almost painlessly cure the most *obstinate* case of irritable fissure or ulcer about the anal margin.

ILLUSTRATIVE CASES.

Case XII.—Painful Ulcer from Constipation.

J. C., aged 39, harness-maker by trade, came to my clinic, at the University Medical College, with the following history: He had been suffering from constipation of the worst form, induced by a sedentary occupation and irregular habits. He did not have more than one action a week, and then as a result of some strong cathartic. Some two weeks prior to the time he applied for treatment he had a very bountiful action. The feces were hard, irregular in shape, and very difficult to expel; so much so that when they were forced out he suffered from a severe tearing, burning pain that radiated toward the coccyx and lasted for two hours after the act had been completed. Considerable bleeding followed the expulsion of the last installment of feces. From then until the operation he had suffered the same severe pains and loss of blood every time he had an action, and in addition, for the last three days, the pain had been almost constant and was made more annoying as a result of the spasmodic contraction of the sphincter muscle.

Examination revealed the presence of a well-marked fissure just within the grasp of the external sphincter; it was inflamed and exceedingly sensitive.

Treatment.—Chloroform was administered, the sphincter was thoroughly divulsed, and the ulcer was painted over with a solution of silver nitrate fifteen grains to the ounce. The rectum was cleansed daily with carbolized water and the silver used every three days for two weeks. At the end of this time the ulcer was completely healed. He was instructed to be regular in his habits and to keep the bowel open. He had no further trouble.

Case XIII.—Painful Ulcer with Bladder Complications.

Mrs. C., aged 27, was referred to me from the country. She complained of some pain in the rectum and said she was positive that some-

thing was wrong with the bladder, for she had a desire to urinate almost all the time. A careful examination of the bladder and the urethra was made, and they seemed perfectly healthy. The urine was examined and nothing of a suspicious nature was found. Next I turned my attention to the rectum, and there, one inch (2.54 centimetres) above the anus, on the posterior wall, an irritable ulcer, about the size of a split pea, was located, which proved to be the source of irritation. We know this because the ulcer was incised through the centre deep down into the muscle. By the aid of cleanliness and a few applications of the balsam of Peru it soon healed and, as it did so, all the bladder symptoms disappeared and never returned. I mention this case simply to show one of the reflex phenomena of painful ulcer or fissure.

Case XIV.—Painful Ulcer within External Pile.

Mr. H., a prominent judge of our city, came to me suffering from complete nervous prostration. He was totally unfit to occupy the bench. He informed me that he was suffering from some exceedingly painful disease of the rectum, which he feared might be cancer, his mother having died with cancer of the breast. On examination an ulcer was found hidden almost from view within the folds of an external pile. No other pathological condition was found. He would not consent to take an anesthetic; so a solution of cocaine was applied on cotton for a short time and a No. 10 soft-rubber bougie introduced and left until the sphincter relaxed sufficiently to admit the speculum. Then the silver solution was applied. The treatment had to be repeated but four times before he was well and returned to his usual duties, free from pain, and in a short time his nervous system was restored to a normal condition.

CHAPTER XIV.

ULCERATION.

Having written of painful ulcer in the previous chapter, it is our intention now to consider all other forms of rectal ulceration, except those due to *cancer*, which will receive full consideration in Mr. Herbert Allingham's excellent chapter on rectal cancer. Rectal ulceration is said to occur more frequently in women than men, due to pressure of the child's head on the rectum during childbirth and from the fact that women are more apt to be constipated. This has not been our experience, for we have seen ulceration occur in men as frequently as in women. We do believe that the ulceration is inclined to be more extensive in women, due probably to constipation. Children rarely suffer from other than painful ulcer except when they are suffering from chronic diarrhea. The ulceration may present itself in a variety of ways: it may be slight or extensive, deep or shallow. Again, the characteristics of the ulcer may be marked. In one case it will be what we term a *live ulcer*. By this we mean one in which the base and edges are red and well defined, but have a healthy look and are quite sensitive to the touch. In another case the ulcer may be *dead*, as it were; it is large and cup-shaped; the edges are not sharply defined, but have a rounded, glistening, indurated appearance, and when it is touched is almost entirely devoid of pain, and in all probability has been there for a long time. There are a great many causes of rectal ulceration, some of which are mechanical and others specific. The following classification includes the usual forms of rectal ulceration that one is likely to meet:—

1. Traumatic.
2. Syphilitic.
3. Dysenteric.
4. Tubercular.
5. Catarrhal.
6. Rodent.

PLATE IX.-ULCERATION AND POLYPOID-LIKE SENTINEL TEATS.

Burk & McFetridge Co Phila Pa

Traumatic.—Traumatic ulceration may be the result of an injury done to the rectum from a variety of causes, among which constipation takes the lead. It usually produces the injury in one of two ways. In the first place, when the bowels have not acted for a long time, the fecal matter collects in large, hard, nodular lumps, which require considerable force to expel. As a result of great straining the mucous membrane is stretched to its fullest capacity, and is quite frequently lacerated or bruised. In the second place the injury is not a result of the expulsion of the fecal mass, but is due to a large impacted mass which presses the rectum back against the bony structures and injures it or by the pressure interferes with the circulation, frequently causing the tissues at the points of pressure to become necrosed and to die. Surgical operations for the cure of piles, polypi, etc., when healing is delayed, often cause ulceration. It may be caused by pressure upon the rectum as the result of a pregnant or diseased uterus, enlarged prostate gland, or a tumor of any kind. Foreign bodies that have been swallowed or introduced within the rectum may cause ulceration,—such as fish-bones, pins, false teeth, etc. Occasionally the parts get bruised from a fall or kick. At another time the ulceration will be due to a ruptured vein or a pile that has sloughed off, or from the lodgment of a small seed in the little depression to be found in the mucous membrane.

Syphilitic.—It is our intention to refer to syphilitic ulceration in this chapter in a general way only, for it will be referred to again in the chapter on syphilitic affections of the rectum and anus. It may be congenital and make its appearance about the anus and lower part of the rectum two or three months after birth; this we have frequently observed in dispensary practice. Again, syphilitic ulcers may make their appearance at the same time that the mucous patches are to be observed in the mouth; but the worst form of syphilitic ulceration of the rectum does not occur until the tertiary stage, when it may be present in large, irregular patches, as a result of one or more gummata's

breaking down. This last form of ulceration we see almost daily in private and dispensary practice, and it seems to be more prevalent among negroes than whites; but this is easy for those to understand who are acquainted with the loose habits of the colored race. This latter form almost invariably terminates in a tight stricture. Ordinarily the diagnosis can be made with little difficulty when due attention has been given to the study of the previous history and the symptoms that present themselves at the time the examination is made.

Dysenteric.—Dysenteric ulceration is recognized by nearly all writers on this subject as being a frequent cause of rectal ulceration. That dysentery causes this condition cannot be doubted, but we are of the opinion that ulceration from this cause is not of frequent occurrence (at least in this country), for we have seen a great number of cases of ulceration from all causes except dysentery. We have only seen two cases where we were satisfied that ulceration was a direct result of a true dysentery. At the same time, we can readily understand why it is put down as a more frequent cause in those countries where the climate is warm and dysentery is known to prevail. So-called chronic dysentery (diarrhea) we know is a frequent cause of rectal ulceration, for we have, time and again, seen an ulceration disappear after the diarrhea had been arrested. It is a well-known fact that any irritant discharge that is being constantly secreted or retained in the rectum will irritate the mucous membrane and cause ulcers to form. We do not wish to leave the impression that diarrhea always precedes and causes ulceration, for such is not the case. It is not an uncommon thing to see a chronic diarrhea relieved by curing an ulcer in the rectum; in fact, diarrhea may produce ulcers and ulcers may cause diarrhea. We will speak more fully of the relation of ulceration to chronic diarrhea in another chapter. Ulceration when due to true dysentery is markedly progressive, and there is a great loss of tissue; and when healing does take place, it is nearly always followed by more or less contraction.

Tubercular ulceration is quite common, especially in those persons who are predisposed to phthisis. Tubercular ulceration presents itself in two forms: 1. As a simple ulceration in those suffering from *general tuberculosis.* 2. Ulceration due to *breaking down* of localized *tubercular nodules.* All who have treated many cases of rectal ulceration, surely, have noticed these two conditions. In the first variety there is not any indication of the tubercular nodules in the rectum; but a simple rectal ulceration, from whatever cause, which is slow to heal on account of the *debilitated* condition of the patient as a result of the lung complication. This form, however, may be benefited by an improvement of the patient's general health and the removal of any local irritation. In the second variety, or *real tubercular* ulceration, we have the local deposits of the tubercular nodules, which may be single, but which, as a rule, are deposited in multiple patches about the rectum, which after a time break down and ulcerate, leaving an ulcer with irregular edges, grayish in appearance, which has not the slightest *tendency* to heal unless vigorously treated. When an ulcer is formed, it seems to be the signal for the other deposits to break down and coalesce, until the whole rectum is encircled by an irregular band of ulceration, which has a grayish, glistening appearance, which does not secrete true pus, but a kind of thin, watery fluid. Under ordinary circumstances the ulceration does not improve, but continues to get worse until life is a burden or death finally relieves the patient of his sufferings. When there is a tendency toward healing, it is followed by a contraction and a stricture. We do not know of any other class of sufferers that are more deserving of sympathy than those just referred to. There is another form of ulceration, termed *lupoid*, spoken of by Van Buren,* which he believes is a result of the *bad habits of women of tubercular constitutions*, upon whom syphilis has been ingrafted.

Catarrhal.—It will be remembered that we spoke of a catarrhal condition due to proctitis, in another chapter, which

* Van Buren, Diseases of the Rectum, p. 232.

induced a diarrhea and an abundant discharge of mucus. The mucus, from its constant passing over the mucous membrane and from its being retained in the lower part of the rectum, causes an irritation of the membrane and, frequently, a surprising loss of tissue. The ulceration thus made is not allowed to heal, but is constantly being aggravated and made worse by the straining and the passing over it of fecal matter that fills every crevice and retards healing. The ulceration in this case is secondary to the inflammation and will not get well until the proctitis is first relieved.

Rodent.—This form of rectal ulceration is exceedingly rare and it is well that such is the case, for it induces very great suffering. It is often confused with cancer of the rectum or tubercular ulceration, owing to the severe pain, amount of tissue destroyed, and its tendency to break out again and again, and its gradual increasing in spite of all treatment. Young and old are alike subject to it. It is not always rapid in its course; patients may live for years while the ulceration gradually extends itself, until finally death comes as a result of hemorrhage or from diarrhea and exhaustion. It usually attacks the lower part of the rectum at the juncture of the mucous membrane and skin. It is a superficial ulceration and the discharge creeping from it contains very little pus and is composed principally of serum. Mr. Cripps* places on record a case, reported by Dr. McDonald,† which illustrates how great the loss of tissue may be. On the hips, just beyond the ischial tuberosities, were long scars of healed ulcers, thin and bluish. The entire ano-perineal region was gone, there being a hollow space as big as a fetal head. The urethra was entire, as well as the mucous membrane between it and the cervix, which was healthy. The anus, rectum, and vagina, other than the anterior portion, were gone, the bowel opening by a tight aperture behind the cervix. The patient could not keep clean, except

* Diseases of the Rectum and Anus, p. 208.
† Edinburgh Medical Journal, April, 1884.

when the feces were liquid. In this fearful condition she performed her household duties. Finally the ulceration extended upward into the pelvis, leaving the bowel hanging loose for some distance from the upper level of the ulceration, giving it the appearance of a torn coat-sleeve. After several years' suffering she died of diarrhea and exhaustion.

Symptoms.

The more prominent symptoms of rectal ulceration are five in number:—

1. Diarrhea.
2. Pain.
3. Hemorrhage.
4. Discharges of pus and mucus.
5. Itching.

Diarrhea. — Rectal ulceration never becomes extensive without causing diarrhea to a greater or less degree. Usually this is the most prominent symptom and the patient comes to be treated for *this*, not knowing that it is caused by the ulceration. The stools may vary from three to twenty a day, accompanied by great straining and tenesmus, which are very exhausting and cause the patient to decrease rapidly in weight. We have under observation at the present time a gentleman who has been suffering from ulceration for one year. At the beginning of his illness he weighed two hundred and forty pounds; at the present time he only weighs one hundred. The frequent stools are brought about as a result of the feces coming in contact with the exposed nerve-filaments, which results in increased peristalsis. The symptoms in many respects resemble those of dysentery, for which it has been mistaken.

Pain.—Pain in ulcerations was referred to in the chapter on the general symptomatology of rectal disease, but not in detail. Persons suffering from ulceration may have very little or a very great amount of pain. It is a common thing for those suffering from extensive ulceration not to complain of pain, especially if the ulceration is situated *high up* in the rectum. In others, where the ulceration is situated *low down*, near the anal

margin, it may be very intense, though the ulcer is quite small. It appears that the *sensibility varies* in different portions of the rectum, the upper part being much less sensitive than the lower. In fact, the *sensibility* increases from *above downward*, and this explains why the pain is so great in a painful ulcer situated on the anal margin, when the lesion is small and out of all proportion to the amount of suffering. The pain may be constant or intermittent; it is usually severe during and immediately after stool. In the interval there may be a dull aching, which may be confined to the rectum or extended up the back or down the limbs; in fact, the reflex symptoms in cases of ulceration are multiple, and they are sometimes so marked as to lead one to believe there is a diseased condition of the bladder, prostate, uterus, tubes, or ovaries. We have in one case located and cured a rectal ulcer that caused constant pain in the pelvis, for the relief of which both ovaries had been removed without giving the slightest benefit. From this and other cases we have treated, it seems to us that the tubes and ovaries are not to blame for all the pains produced in the pelvis, but that *ulceration of the rectum* not infrequently plays an important part, and should not be overlooked, but searched for carefully when pains are present in the *pelvis* which cannot be accounted for in any other way.

Hemorrhage.—Hemorrhage is always present in a greater or less degree, depending upon the *location* and *extent* of the ulceration. It may be so slight that the discharges are tinted with it, or, perhaps, a slight streak may be seen on one side of the fecal mass. In another case, when the ulceration has eaten deeply into the tissues and into some artery or vein, the bleeding may be very *profuse*, and large quantities may be lost before it will stop or can be averted. We have seen this occur to such an extent that the patient fainted from the loss of blood; others have reported cases that terminated fatally as a result of such hemorrhages. Ordinarily, there will be more or less bleeding after every stool, for the passage of the fecal mass over the raw

surface scrapes off any little *plug* that might have occupied the rent in the vessel, and the bleeding starts anew. When it becomes mixed with the contents of the rectum it forms a dark-brown, semisolid mass, which closely resembles coffee-grounds.

Discharges.—Besides the blood, there will be discharges of pus and mucus in varying quantities. When the ulceration is slight they will be small, but increase in proportion as the ulceration extends itself. Such a discharge is constantly found seeping out at the anus, the margins of which will be glued together; it is sticky, reddish in color, of the consistence of pus, with here and there a piece of necrosed tissue.

Itching.—In cases of long standing there will almost invariably be a pruritus about the anal margin, and this may extend in any direction, until many deep fissures are to be seen. This condition is produced by the irritating discharges that are constantly oozing out, and it usually subsides when the ulceration has been cured.

Other Symptoms.

When the ulceration is extensive and chronic, the patient will be subjected to attacks of peritonitis that may cause intestinal adhesions to a greater or less extent. This fact has been repeatedly demonstrated on the post-mortem table. In case there is not a free exit for the discharge, it will burrow and form an abscess and fistula will follow. Where the ulceration is extensive, as healing takes place, a certain amount of contraction must unavoidably follow. As the ulceration encroaches upon the anus, both sphincters may be destroyed; the anus becomes patulous and is surrounded by a broad, dark ring, with several club-shaped tags of skin hanging about the margins. These tags, discolored skin, and the patulous condition of the sphincter are always indicative of *serious* rectal disease.

Diagnosis.

The diagnosis is not difficult to make if ordinary care is displayed in getting the history and in making the examination

with the appliances at our command. When the ulceration is at all extensive a diagnosis can be made with the finger. If it is slight, by the aid of a hinged speculum all sides of the bowel can be separately examined and the ulcer located without causing much pain. It is not a difficult thing to diagnose rectal ulceration, but it is not always so easy to tell its *character*, unless it be of the traumatic variety.

Prognosis.

A great many general practitioners look upon an ulceration of the rectum as being a comparatively *trivial* matter, and think it easy to cure. Just here we wish to correct this impression and to say that there is scarcely any other surgical disease that requires more persistence and scientific skill to effect a cure than rectal ulceration. It is true that the traumatic variety easily succumbs to simple treatment; yet many of the cases of chronic ulceration, such as tubercular, syphilitic, cancerous, and dysenteric, frequently go on from bad to worse in spite of all treatment, until a stricture is formed, perforation of the bowel occurs, or the patient dies from exhaustion, as a result of the constant diarrhœa and hemorrhage. It is best to inform these sufferers that we can from the start relieve their suffering in part, but, if they wish to receive any permanent benefit, they must prepare themselves to follow out all instructions to the letter, and they must submit to treatment for several weeks or months.

Treatment.

The treatment is divided into two classes:—

1. Palliative. 2. Surgical.

PALLIATIVE TREATMENT.

It is at once obvious that the treatment of rectal ulceration must be varied, depending not only upon the extent of the ulceration, but upon the initial cause. For instance, one would not think of giving the same treatment in a simple traumatic

ulceration that would be given for an ulceration due to syphilis. The treatment of rectal ulceration is far more serious than that of a painful ulcer at the anal margin. The most prominent feature in the treatment of extensive ulceration from any cause is *rest*. When we say *rest* we do not mean that the patient is to lie down a few moments and then go about her household duties, but that she must go to bed and stay there for weeks and sometimes months, and give nature a chance. Rest acts as does a splint, and prevents venous congestion of the rectum,—a condition that is certain to occur in the erect posture. The result obtained is similar to that when we treat an ulceration of the limb by elevating it and supporting the superficial vessels with adhesive straps or for varicose veins of the extremities. We must now endeavor to assist nature to build up the tissues by both local stimulants and constitutional remedies. If the patient is debilitated, tonics are indicated; codliver-oil, iron, malt preparations, beef-juice, etc., will be found useful. For diarrhea many remedies have been suggested and stood the test for a time. As a rule, however, the good effect of any medicine wears off after a time and a new one has to be substituted. Vegetable astringents are very good, combined with opiates, to prevent tenesmus and straining. We have seen the number of stools diminish after a few doses of tannic or gallic acid. Preparations of starch, bismuth, magnesia, and chalk are all good in some cases. Morphine and pulverized opium relieve the pain and diminish peristalsis. They must be used very *cautiously*, for ulceration is very often a chronic disease; and if patients commence using these drugs it is very difficult, indeed, to get along without them, and when the ulceration is healed they are apt to keep up the habit.

Diet.—The diet should be simple and non-irritating and liquid, so far as practicable. All highly-seasoned foods, pastries, tobacco, and all alcoholic stimulants should be discouraged and a milk diet substituted. Some patients will recover with no other treatment than rest and the correction of certain errors in diet.

Local Treatment.—The local treatment varies, and will require changing from time to time. The one thing essential is to keep the rectum thoroughly clean. This is best done by copious injections of warm water and Castile soap or carbolized water, at least twice a day, and more frequently where the ulceration is extensive and forms pockets in which pus may accumulate. When pus is allowed to accumulate it will bur-

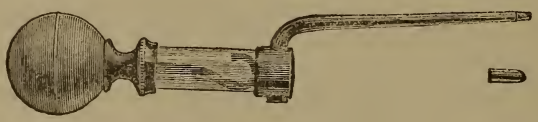

Fig. 45.—Insufflator.

row, an abscess will form, and a fistula will be the result. This we have frequently seen. Weak solutions of bichloride are good,—say, one part to five or six thousand; it is not well to use them much stronger, else vomiting and tenesmus will follow. After the bowel has been cleaned out, a mixture, composed of balsam of Peru half an ounce, glycerin one ounce to four of water, well mixed, proves both soothing and healing. The balsam alone mopped over the ulcerated surface is one of the best stimulants we know of. Copious injections of nitrate of silver,

Fig. 46.—Allingham's Ointment Applicator.

twenty-five grains to three pints of water, injected twice a week, will be followed by marked improvement. When applied directly to the ulcer, it may be used as strong as twenty grains to the ounce. Fuming nitric acid has been highly recommended as well. Suppositories of opium, belladonna, etc., are sometimes serviceable. We rarely ever use them for the reason that when they are introduced they cause more or less pain and

straining. Dusting-powders introduced by an insufflator (see Fig. 45) and ointments used in the ointment applicator (see Fig. 46) both are useful. The best medicines to use, either as powders or ointments, are the astringents,—lead, zinc, alum, calomel, bismuth. subnit. and subiodide, stearate of zinc with balsam or menthol, and iodoform. To allay any irritation a solution of cocaine, fifteen or twenty grains to the ounce, will do as well as any. When the ulceration is due to syphilis the patient must undergo the ordinary treatment given for syphilis in addition to the local medication. (See chapter on "Syphilitic Affections of the Rectum and Anus.")

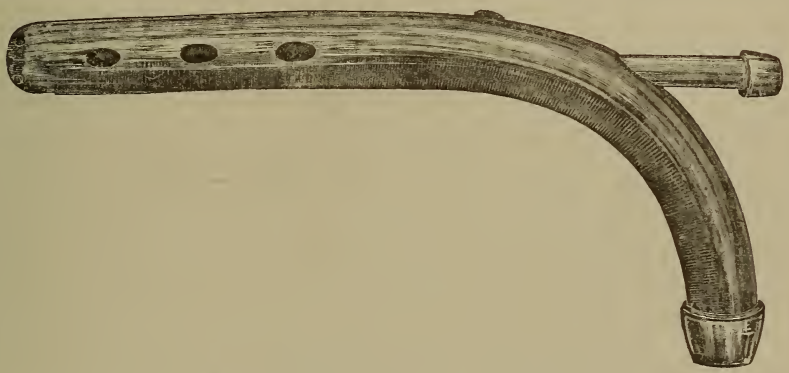

Fig. 47.—Sims's Irrigator and Drainage-Tube.

SURGICAL TREATMENT.

When the ulceration is a simple one and of traumatic origin, it can be easily and quickly cured by a thorough divulsion of the sphincters, to be followed by two or three applications of solution of silver. This we have demonstrated many times both in private and hospital practice. If ulceration be due to syphilis, dysentery, or tuberculosis, this treatment will not be sufficient. In addition, it is necessary to thoroughly curette the ulcers down to the healthy tissue; then apply some stimulant or caustic, irrigate the rectum, and place the patient in bed. Division of the base of the ulcer including the sphincter will insure rest. Many prefer this to divulsion. When

there is a single ulcer that is not too large or does not extend through the mucous membrane, it may be removed by including it in two elliptical incisons when the edges are brought together with catgut sutures. After such an operation, if a dry dressing can be placed and retained over the cut for a few hours it will be a success; otherwise, it will prove a failure. The *injection* of *astringent* fluids into the base of an ulcer does not have any advantages over ordinary medications.

In those cases which keep on getting worse and worse, when the pain is most intense and the diarrhea is so bad that it keeps the sufferer in the closet almost half his time in spite of all local and constitutional treatment, there is only one thing left to do, and that is to *perform colotomy*, which will be thoroughly described by Mr. Allingham in his chapter on this subject. Colotomy, when performed as it should be, gives immediate relief and all the tenesmus is done away with. It gives us an opportunity for flushing the entire rectum and sigmoid from above and below, and enables us to apply the medications directly to the seat of the ulceration. In this way many cases that would otherwise be incurable can be cured, after which the opening can be closed or left open. Many patients who have had colotomy performed object to having the opening closed on account of the necessity of undergoing another operation, or through fear that the ulceration may return. The *relief* is so *great* and the *inconvenience* caused by the artificial anus is so *slight* that they do not care to take any chances of having the pain and tenesmus return. We speak of those who have had a left inguinal colotomy; for, after this operation, patients can dress themselves, wear a truss, and attend to their ordinary duties. The disgust to colotomies that existed in former years is fast, and very properly, dying out, for the condition of persons after inguinal colotomy is not nearly so deplorable as many who have never seen the operation would believe.

ILLUSTRATIVE CASES.

Case XV.—Ulceration of the Rectum.

A banker, aged 41, a slender man, of pallid countenance, suffering from some rectal trouble, consulted me in the latter part of December, 1892. He stated that he had considerable pain every time he had an action; and, further, that at times there was more or less bleeding and always some pus; the latter was usually of a brick dust color. He suffered intense pain almost constantly when on his feet. Now and then it would be reflected up the back and down his legs. Of late he had been much annoyed by an unpleasant sensation in the lower portion of the rectum, as if the bowel were going to act. The stools were frequent and accompanied by griping and tenesmus. I carefully examined into his general health and found it all that could be desired. He assured me that if I could correct his rectal disease he would be all right. The sphincter being very tight, I advised him to take an anesthetic, that a thorough examination might be made, and told him that if a surgical operation were necessary it would be performed while he was unconscious. A Cook speculum was inserted well up the bowel after the sphincter had been divulsed, and by the aid of a good light an ulcer as large as a silver half-dollar was located on the posterior wall of the rectum, a little to the right of the median line, two and one-half inches (6.4 centimetres) above the anus, the edges of which were rounded, raised, and very hard; all of which demonstrated the fact that it had been there for many weeks, if not months. On either side of it were two white polypoid growths about half an inch (1.3 centimetres) long. (See Plate IX.) The mucous membrane below the ulcer was somewhat excoriated, as also was the anal margin, because of the acrid discharge that was passing over them.

Treatment.—The ulcer and the immediate vicinity were curetted thoroughly and then incised. We next paid our respects to the external sphincter and severed it, because of its tonic contraction. The bowel was irrigated with a solution of carbolic acid and a piece of gauze inserted to insure drainage and to warn us in case of hemorrhage. The patient was then placed in bed and surrounded by hot bottles. Thirty-six hours afterward the gauze was removed, the rectum irrigated, and the ulcer dusted over with calomel, which, by the way, is a valuable remedial agent in starting healthy granulations in almost any chronic sore. A fluid and semisolid diet—which consisted principally of milk, soft-boiled eggs, and strong soups—was ordered. The bowels were moved every second day, by aid of mild cathartic mineral waters. He was not allowed to get out of bed or sit up for three weeks. During this time the ulcer was

cleansed, and either a solution of silver, the balsam of Peru, or calomel was applied every other day. By this time the diarrhea had stopped; he was free from pain and had gained twenty pounds in weight. The local applications were continued for three weeks longer, when the ulcer had entirely healed. He was then discharged, with instructions to return to the city immediately should he ever feel any uneasiness about the rectum. It has now been two years since I saw him last, but I have heard that he is perfectly well.

Case XVI.—Ulceration of the Rectum.

About one year ago the first of this month I was requested to visit a young lady at a boarding-school; she was suffering from some rectal disorder. The principal informed me that she had been very despondent of late and had frequently remarked that if she did not get relief soon she would commit suicide. On questioning her I learned that she was of an exceedingly nervous temperament, and that six months previously she had a diarrhea that lasted for three weeks, when suddenly it ceased and she became markedly constipated instead. Up to this time she had no pain except the tenesmus that accompanied the frequent stools; recently, however, she was seldom without pain. When asked where it was located she placed her hand over the coccyx and sacrum and said it was there most of the time, but now and then over the ovaries. She suffered most, however, during and for about one hour after defecation. The pain was so severe at times that she almost went into spasms. She menstruated regularly and there was no indication of bladder or kidney trouble. She finally consented to a digital examination, provided I would give her chloroform and do what was required at the same time.

Examination revealed three ulcers, about the size of a silver dime, at the upper edge of the internal sphincter. They were highly inflamed and so was the rectal wall in the immediate vicinity. The sphincter muscles were stretched first in one direction and then in another until they were passive; the ulcers were then painted over with nitric acid, care being used not to get any on the healthy bowel. Since the edges of the ulcers were not thickened nor indurated, and the muscles were not hypertrophied, it was not thought advisable to incise either. The after-treatment consisted in keeping her in the recumbent position, the diet was restricted to liquids and semisolid foods, and the bowels were moved gently every other day. In the meantime the rectum was irrigated daily with carbolized water, while a mild astringent was applied to the ulcer every other day. This plan of treatment was continued for only two weeks, when the ulcers were completely healed and all the local symptoms had disappeared. Her school-girl friends said that she was

like her old self again and as jolly as any of them. Three months after she was discharged she wrote me that she was perfectly well. I think that I never treated any one who was more grateful for services rendered.

Case XVII.—Tubercular Ulceration.

A lady, aged 31, was referred to me by a physician from a neighboring town, with the following history: She had inherited a phthisical constitution from her mother and had always been very delicate. One year previous to the time I saw her she caught a cold and had been bothered with a very annoying cough ever since. She had night-sweats, which weakened her very much. In addition to this she was suffering from a rectal trouble that caused much pain, and she had frequent stools that were mixed with a thin, glairy-looking pus with a foul odor.

Examination revealed a patulous anus. The speculum was inserted without the slightest pain and a deep ulcer with irregular edges was located just within the external sphincter, which was almost eaten through; this, in part, accounted for the patulous appearance of the anus.

Treatment.—On account of the lung complication it was deemed advisable not to give an anesthetic, but to cocainize the parts, to curette and apply nitric acid to the ulcer, and not to incise the sphincter, for in such cases too much cutting may result in incontinence. Tonics and a strong diet were prescribed; she was also requested to spend most of her time in the open air in the sunshine. This, together with the local application of mild astringents, constituted the treatment. It required nearly three months for the ulcer to heal, owing to the debilitated condition of the patient. She was never bothered again with the ulceration, but she died, some eighteen months after she left the hospital, from the old lung trouble.

CHAPTER XV.

BENIGN STRICTURE.

A STRICTURE of the rectum is a narrowing of the gut; it may result from contraction or from mechanical pressure outside of the bowel, caused by an enlarged prostate, a dislocated uterus, or a tumor. In one case the contraction will be very limited, not being more than one-half inch (1.27

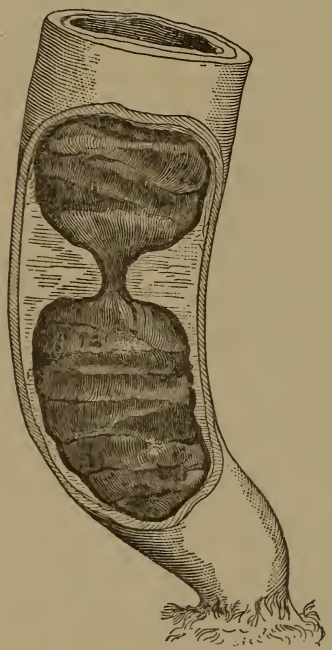

Fig. 48.—Diagrammatic Drawing of Annular Stricture.

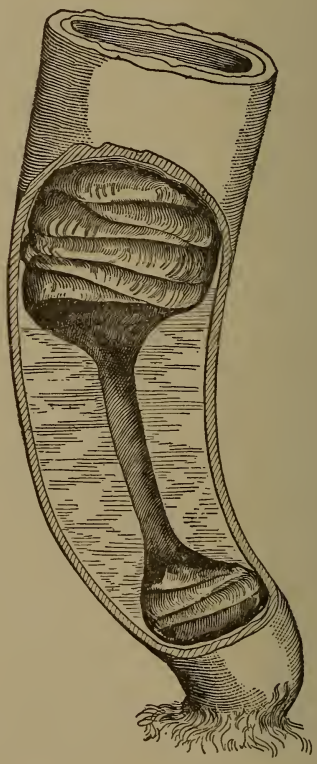

Fig. 49.—Diagrammatic Drawing of Tubular Stricture.

centimetres) in breadth (annular, see Fig. 48), while in another it will be broad and may involve two or three inches (5 or 7.6 centimetres) of the bowel or more (tubular, see Fig. 49). On close examination the mucous membrane, as well as the submucous

tissue, will appear rough, thickened, and indurated, as a result of the chronic congestion and infiltration. A stricture may or may not entirely obstruct the calibre of the bowel. When the bowel is entirely occluded it is called *complete*. When all or a part of the fecal matter can escape through the stricture it is a *partial* stricture. There are many kinds of strictures, when classified from an etiological stand-point, which seems to us the most rational way of classifying them; though some high in authority do so according to the *shape* of the constriction and the amount of the bowel involved, designating them annular, tubular, crescentic, etc. Knowing as we do that a very large percentage of all strictures is due either to inflammatory deposits or cicatrization following some one of the various forms of ulceration, as described in the previous chapter, we shall base our classification upon these facts, and give the same classification for stricture that we did for ulceration, considering each in detail; then we shall pay our respects to some other varieties of *stricture* as given by other writers on this subject. The following classification will include all the different kinds of stricture likely to be met with in the rectum. We have purposely omitted *cancerous* stricture, for Mr. Allingham will deal with this variety in his chapter on cancer:—

1. Traumatic.
2. Syphilitic.
3. Tubercular.
4. Catarrhal.
5. Dysenteric.

General Remarks.

Stricture of the rectum is usually located in the lower portion, though no part of the colon or rectum is exempt. The location may vary somewhat, but in the majority of cases it will be within two and one-half inches (6.4 centimetres) of the mucocutaneous junction. Stricture is rarely ever found in the young; only a few cases have been reported in young children. We treated one case, that of a colored girl, aged 13, due to syphilis. It is the exception to see a case of stricture in a person under

30 years old. Women are much more prone to this disease than men. One reason is on account of their being more subject to constipation.

Traumatic.

All writers agree that traumatism is a frequent cause of stricture in the rectum as well as in other portions of the alimentary canal. The injury that is directly or indirectly responsible for the stricture may be slight or extensive, the result of a blow from the outside or from pressure of some internal organ; it may cause diminution in the calibre of the bowel by obstructing one side of the rectal wall, or the whole circumference may be involved. The constriction in exceptional cases may occur

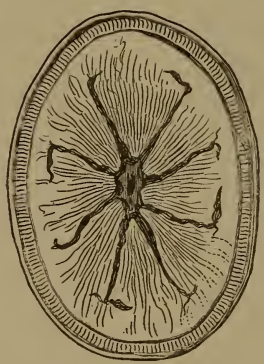

Fig. 50.—Appearance of a Cross-Section of Strictured Rectum.

suddenly; as a general thing, however, a constriction comes on gradually, as a result of some wound or ulceration that refuses to heal. The following are some of the more common causes of traumatic stricture:—

1. Surgical operations.
2. Constipation and fecal impaction.
3. Introduction of foreign bodies, accidentally or otherwise.

Surgical Operations.—We have no doubt that surgical operations frequently cause rectal stricture, for we have seen and treated several cases where the stricture was directly traceable to this cause. We desire to say, in justification of this

statement, that nearly all of these cases had been operated on by some one of the numerous *ignorant itinerants* and *orificial surgeons* that infest this portion of the country. It has been our good fortune never to have a well-marked stricture follow any operation. In one instance there was some constriction, which was easily remedied, caused by the removal of several cutaneous tags and piles. The constrictions following the operation by the itinerants were, in a large percentage of the cases, due to sloughing and ulceration, following the injection of different solutions into pile-tumors. After an operation the patient is told to go about his ordinary duties, and no attention is paid to the ulceration. In some instances it may get well, while in others it becomes chronic and gradually extends itself, healing in one place and breaking down in another, until constriction follows. We remember one case of almost complete occlusion, due to an extensive ulceration produced by the injection of a considerable quantity of pure carbolic acid into the rectum through a fistulous tract. The operator in this case promised the patient a cure without the knife and said that all that was necessary was to inject some medicine into the fistula. The patient came to us six months after the injection had been made and said his suffering had been greatly increased by the treatment he had undergone. On examination we found a tight stricture and a complete fistula. We have treated a number of strictures of the worst form caused by non-union of the skin and mucous membrane following Whitehead's and the so-called "American" operation.

Constipation and Impaction.—Constipation may be put down as a cause of stricture from the fact that it is one of the most frequent causes of ulceration, the said ulceration being a result of an injury done to the rectum during the passage of some hard fecal mass or from a necrotic condition of the tissues that have been pressed upon by the fecal mass.

Foreign Bodies.—A few cases have been reported where a stricture followed an ulceration set up by the presence of some

foreign body in the rectum. A variety of foreign bodies have been found in the rectum, some due to accident, others placed there by insane people, and still others by criminals to prevent the finding of a pocket-knife or saw by the jailer. It has been said that one gentleman, who had been to Europe, secreted a number of diamonds in the rectum to escape paying the custom-house duties. We have treated one case only in which we thought that the stricture was traceable to a foreign body; this was in the case of a locksmith who came to us to be treated for piles and constipation. He had all the ordinary symptoms of stricture with external piles. Chloroform was administered in order that a linear proctotomy might be made. On introducing the finger through the stricture something very hard was detected, which was removed with great difficulty. It proved to be an angular piece of iron about three-quarters of an inch (2 centimetres) long and half an inch (1.27 centimetres) broad, which had become firmly imbedded in the tissues and acted as a source of irritation from which the ulceration that produced the stricture started. When we showed the piece of iron to him he was much surprised and said it was a piece that belonged inside a lock. He had been in the habit of holding certain pieces of a lock in his mouth while he was filing others, and on one occasion swallowed this piece, which caused him much anxiety for a few days, but as it never gave him any further trouble he supposed that it had passed out with the contents of the bowel.

Parturition is mentioned as a cause of stricture. We have never seen a case in which we thought the stricture due to this cause; we believe that such an occurrence is quite rare.

Syphilitic.

Syphilis in the form of gummatous deposits within the rectal walls or from ulceration certainly *heads* the list of causes of stricture of the rectum. In fact, we believe it to be the cause of as many strictures as all other causes put together in *dis-*

pensary practice. Just what percentage of cases of stricture are due to syphilis is a much mooted question and has been the cause of much controversy. Allingham endeavors to throw some light on this question by recording one hundred cases observed by him in private practice and at St. Mark's. He says: "On summing up my own statistics I can, in short, state that, in women, 42 out of 80 had suffered from, or were suffering from, undoubted constitutional syphilis, and, in 20 males, half were in the same condition; thus, out of a total of 100 patients, 52, or more than one-half, were syphilitic."* He ascribes the causes in the other 48 cases to tuberculosis, dysentery, diarrhea, constipation, and surgical operations; while in a large number he was unable to assign any cause.

Cripps† places on record 70 cases of stricture recently admitted to St. Bartholomew's Hospital, and gives the probable primary causes, as follow:—

1. Syphilis,	13
2. Childbirth,	8
3. Operations for piles,	8
4. Operations for fistula,	2
5. Congenital,	2
6. Inflammation of the bowels,	2
7. Internal fistula,	2
8. Dysentery,	2
9. Tubercular diseases,	1
10. Unassigned,	30
Total,	70

Of the 70 cases, 63 occurred in women and 7 in men. It would appear, from the foregoing table, that 18 per cent. represents as nearly as possible the proportion of cases of stricture which can be fairly assigned to syphilitic origin. Cripps would lead us to believe that some authors attribute stricture to syphilis without due evidence, and asks why it is that this diathesis should so much more frequently lead to

* Allingham, Diseases of the Rectum and Anus, p. 278.
† Cripps, Diseases of the Rectum and Anus, p. 226.

stricture in women than in men, for a much larger number of males than females suffer from syphilis,—about the proportion of ten to one,—a proportion exactly reversed in the frequency of stricture. He believes that the true explanation of the preponderance of this disease in females, whether specific or otherwise, is to be sought rather in the *anatomical* relations of the rectum than in any constitutional diathesis. In the last two years the author has treated 25 cases of stricture of the rectum and assigned them to the following causes:—

1. Syphilis,	13
2. Tuberculosis,	2
3. Diarrhea,	2
4. Dysentery,	1
5. Rectal catarrh,	2
6. Traumatism,	2
7. Unknown,	3
Total,	25

Of the 25 cases, 20 were in women and 5 in men; 13, or more than one-half the total number, had syphilis. Again, we find that women are apt to suffer more from this disease than men, and that syphilis is to blame in a very large percentage of the cases. We have not included in the above report those strictures which are ordinarily described as *spasmodic strictures*, nor have we included the congenital form as given by some authors. From the study of our dispensary practice we are firmly convinced that a greater proportion of the *colored race* than of white people are afflicted with strictures. We ascribe this to the fact that a large percentage of negroes have syphilis, either acquired or inherited. *Chancroids* are sometimes found about the anal margin, but rarely extend high up into the rectum. It is quite the exception to see a stricture from this cause, but when it does occur it can be located near the anus. The causes of the other cases of stricture recorded in the above table were due to some of the various forms of ulceration described in the previous chapter, except in

the few referred to as *unknown*. The real cause of these is still a mystery, yet they were well-marked fibrous bands. Allingham thinks that, if we understood why women suffer more frequently from ulceration and stricture than men, we would have the solution of the problem and could tell the cause of those strictures which are mysteries at the present time.

Tubercular.

This form of stricture is not common, for the reason that tubercular ulceration rarely ever heals; consequently, constriction does not take place. It is not impossible for a stricture to occur, in cases of tubercular ulceration, as a result of induration and inflammatory deposits. Kelsey* has seen this condition occur too palpably to be mistaken. Patients suffering from tubercular stricture are always in a deplorable condition, and have little to hope for.

Catarrhal.

Inflammation of any portion of the intestinal tract may result in a stricture, no matter whether the attack be acute or chronic. Certain changes are produced in the rectal wall as a result of inflammatory deposits or of cicatrization following ulceration, which is started by the mucous membrane's becoming irritated from the constant passing of large quantities of retained and irritating mucus.

Dysenteric.

That dysentery causes stricture cannot be doubted; but we believe that it is of exceedingly rare occurrence in this part of the United States. At the same time we can readily understand how it may be a more common cause in countries where the climate is very warm and dysentery is more prevalent. A stricture following dysenteric ulceration usually involves a considerable portion of the bowel. Sometimes there are multiple

* Kelsey, Diseases of the Rectum and Anus, p. 345.

strictures, one stricture being situated above the other. The case referred to in the table was one of the latter class.

Other Forms of Stricture.

In our classification of the forms of stricture we have not mentioned the following, which other authors include:—

1. Congenital.
2. Muscular Bands.
3. Inflammatory.
4. Spasmodic.

Congenital.—We believe that these strictures (malformations) should not be treated under this heading, for they properly belong to the chapter on congenital malformations of the rectum and anus, where we have described them in detail.

Muscular Bands.—The semicircular bands which are distributed about the rectal wall in a spiral fashion, and which sometimes extend for some distance out into the rectum, have been mistaken for and diagnosed as strictures of the rectum, because a rectal bougie came in contact with them when introduced into the rectum. Some charlatans take advantage of this anatomical fact and make unsuspecting patients believe they are suffering from a stricture, and to cure this they exact a large fee. This practice is said to have been quite common at one time. To illustrate the extent to which this practice was carried on, Mr. Henry Smith* tells the following story. He says: "A certain gentleman's wife had received treatment with bougies for supposed stricture. She informed her husband of what had transpired. He became infuriated at the liberty taken with his wife, and called at the house of the practitioner with a horse-whip in his hand, intending to punish him. But," the story goes on to say, "instead of applying the whip to the operator, he quietly submitted and had the bougie passed upon himself." Such was the influence of the surgeon in question in persuading his patients to believe that they were suffering from stricture of the rectum.

* Henry Smith's Surgery of the Rectum, p. 43.

Inflammatory.—We believe with Mathews that inflammation plays an important part in stricture formation, from whatever cause. When ulceration is present, a certain amount of inflammation precedes and accompanies it, and is partly responsible as a cause of the stricture when it occurs. Sometimes a stricture is found independent of any ulceration, as a result of the rectal wall's becoming thickened from inflammatory deposits following proctitis. To say that a stricture is of the inflammatory variety is not definite enough, for the same might apply to almost any stricture. When there is either an acute or chronic inflammation of the bowel, we believe that it should be designated as *catarrhal*, and not inflammatory. Then, any one will readily understand just what is meant.

Spasmodic Stricture.—Probably no other subject concerning rectal disease has enlisted more discussion than the one now under consideration. The bone of contention has been: Is the spasmodic contraction of the rectum that is sometimes observed a real stricture, or is it a symptom of some other pathological condition?

Van Buren* says: "Wherever muscular spasm exists, voluntary or otherwise, there must be a cause, reflex or direct, and this cause is to be recognized as the disease, and not the *narrowing* to which it gives rise. Permanent spasm of involuntary muscle I regard as an impossibility."

Again,† he says: "Neither in imaginary nor in actual stricture of the rectum is *muscular* spasm an element of any practical importance."

Leichtenstern‡ says: "The existence of such an affection no longer calls for serious discussion."

Mr. Harrison Cripps,§ after agreeing with Van Buren and other writers that permanent or perpetual spasm of the involuntary muscular fibre is a physiological impossibility, goes on

* Van Buren, Diseases of the Rectum, p. 260.
† American Journal of Medical Science, October, 1879.
‡ Leichtenstern, Ziemssen's Cyclopedia, vol. vii, p. 484.
§ Cripps, Diseases of the Rectum and Anus, p. 223.

to say that "There is a condition of temporary, followed by permanent, shortening to which muscles, frequently stimulated by reflex irritation, are liable." In proof of this statement, he cites untreated cases of chronic knee-joint disease. He argues that any irritation, as an ulcer, inducing continual reflex contraction in any muscular canal might terminate in a permanent shortening of its fibrous elements, thus producing an annular stricture, and in these views Mr. Ball, of Dublin, concurs. While we have not studied this question sufficiently to give a positive opinion as to the correctness of Mr. Cripps's views, we must admit that this argument is both ingenious and plausible, and the case he reports bears out his assertions. We have never seen a case of stricture of the spasmodic variety situated above the sphincter muscles, and have heretofore believed that such a stricture was a physiological impossibility. We have quite often observed a strictured condition within the lower inch (2.54 centimetres) of the rectum as a result of reflex spasmodic contraction, induced by constipation, fissures, etc., which had continued so long that the muscles had become thick, firm, and hypertrophied. But it is difficult for us to comprehend how such a condition could occur in the rectal wall, above the sphincter, unless it is due, as Cripps claims, to the constriction (shortening) of the levator ani muscles and to the normal circular muscular fibres of the bowel. Such cases must necessarily be of very rare occurrence.

Chloroform will settle the question as to whether a stricture is *spasmodic* or not. When complete narcosis is obtained the stricture, if spasmodic, will at once disappear; if otherwise, it will remain.

Pathological Anatomy.

In studying the morbid anatomy of stricture there are many points to take into consideration. Not only are the mucous membrane and the muscular coats of the rectum *diseased at the point of constriction*, but frequently both above and below. (See Plate X.) On post-mortem examination, in most instances, a

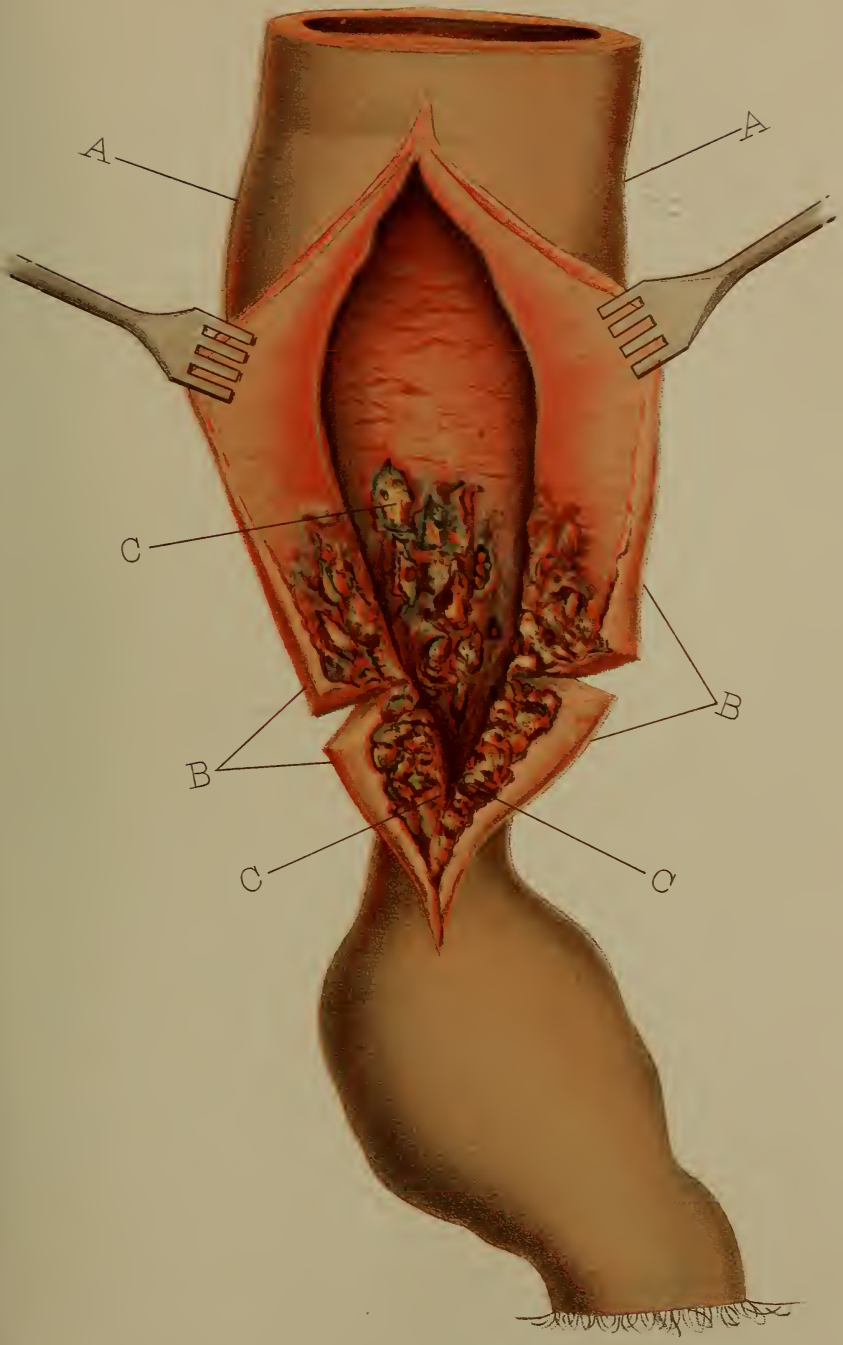

PLATE X.- DIAGRAMMATICAL DRAWING OF STRICTURE OF THE RECTUM DUE TO ULCERATION.

A. Dilated Rectum above Stricture.
B. Thickened walls near Constriction.
C. Ulceration at and above the Stricture.

Bunk & McFetridge Co. Lith. Phila.

section of the stricture will have a firm feel, a glistening appearance like other scar-tissue, will creak when pressed between the fingers, and is very hard to cut with the knife. There will be found an abundant increase of connective tissue at the seat of the stricture and in its immediate vicinity; all of the rectal coats and tissues beneath the same and in the ischio-rectal fossæ will be found indurated and hard. In cases of long standing, ulceration and irregular nodules can be felt both above and below the strictured point. Dilatation of the rectum above the point of constriction always takes place,—due largely to fecal impaction,—while narrowing is the rule below the stricture. Fistula is a frequent complication and acts as a sewer to carry off the discharge from the ulcerations. A fistula opens more frequently above than below the stricture. Around the anal margin and lower part of the rectum will be seen vegetations, piles, and tags of skin which are always indicative of a chronic discharge. When the fistula becomes stopped up or the submucous tissue becomes infected from the poisonous discharges an abscess will be the result. This abscess may open into the bladder, the vagina, or upon the surface of the body. Frequently the intestines will be bound together by bands of adhesions, the result of a chronic peritonitis. In one fatal case, where we succeeded in getting a post-mortem examination, we found the intestines all matted together and literally covered with pus.

Symptoms.

The symptoms of rectal stricture must necessarily be both local and general. The former are due to ulceration, while the latter are caused by mechanical obstruction of the alimentary canal; such an obstruction creates a disturbance in both the circulatory and the nervous systems and causes a long train of misleading symptoms. The stricture is quite frequently overlooked until obstruction takes place. The early symptoms of stricture are almost identical with those of ulceration referred to in the previous chapter. The earliest symptom usually is that

of chronic constipation. For a time these patients get on without medicine; but as the constriction narrows down purgatives are taken, the stools are softened, and all goes well for a few months longer. Then the patient observes that he spends a longer time in the closet than of old and that much straining is indulged in before the bowel is thoroughly emptied. As time goes on this straining increases, and, instead of being constipated all the time, he now and then has a diarrhea; then, for a time, diarrhea alternates with constipation. A few days of constipation will be followed by diarrhea. From this time on, as the constriction becomes tighter and tighter, the constipation gives way and the diarrhea predominates and the patient is required to go to stool many times a day; in fact, during the later stages of the disease these sufferers will spend half their time in the closet and will frequently pass small quantities of liquid feces. There is a *never-ending* feeling that the bowel has not been thoroughly emptied and that something is yet to come away. It is necessary to take the strongest cathartics, followed by copious injections of warm water and glycerin, to liquefy the feces before they can be voided. The straining and tenesmus which accompany the frequent stools are something frightful; in fact, we do not know of any other condition that will induce so much suffering. The pain is described as bearing down and is probably the result of a large, hard lump of fecal matter which rests upon the upper surface of the stricture, but cannot be forced through it. The pain during the intervals of straining is nominal. In cases of long standing the pain is reflected to the neighboring organs, up the back, over the abdomen, and down the limbs. Cramping of the lower extremities is not an uncommon symptom of stricture.

Character of the Stools.—Much knowledge can sometimes be gained by a close inspection of the stools, yet one must not rely too much on the *shape* of the feces, for they are sometimes very deceptive and cannot be relied upon as a positive diagnostic sign of stricture, as many of the text-books on general surgery

would have us believe. They are never, or rarely ever, normal in shape when there is a tight stricture, but are described as looking like a pipe-stem, piece of ribbon or tape, and very long; sometimes the motions are flat, again they will be round. We have known instances where the stricture was located high up in the rectum, where the motions were large, hard, and almost normal in shape; and many of the older writers would have said there was no stricture. This is easily understood when we know how readily the soft and semisolid feces can pass through the stricture into the lower portion of the rectum; and when there, if not soon discharged, immediate absorption of the watery portion takes place, and if a sufficient quantity has come down a well-formed motion may be discharged. On the other hand, we have many times seen the *ribbon-like stools* when there was not the slightest sign of a stricture, due to the *spasmodic contraction* of the sphincter muscle from fissure or ulcer. When a tape or ribbon-like stool is of frequent occurrence it should lead us to suspect a stricture, and a careful examination should be made. A short time since my class at the University Medical College and myself had the unusual opportunity of studying the mechanism of a stricture, so far as the stools were concerned, in a woman who was being anesthetized that the stricture might be divided. The sphincters had been thoroughly divulsed, and I was in the act of incising the stricture, located one and a half inches (3.8 centimetres) above the anus, when the patient commenced to strain and to vomit. The stricture was forced down through the external sphincter and was presented to the full view of every one. Just then the straining increased, and a string of solid feces two feet long was forced through it. The string was in diameter the size of an ordinary pen-staff; this was followed by a discharge of liquid feces, which was thrown out with such force as to lodge against the opposite wall, some five feet away, in a manner similar to that of water coming out of an ordinary rubber hose the force of which is increased by a narrowing of the nozzle.

Patients suffering from stricture invariably have a worn-out, pinched expression about the face. The tongue will be coated, the breath very offensive, and the skin will look sleek and waxy. The general appearance of the patient is much like that of one suffering from general tuberculosis.

Peritonitis, either acute or chronic, occurs sooner or later in almost every case, and continues until the stricture is cured or death ensues from exhaustion. A post-mortem examination will always confirm this statement. The inflammation occurs as a result of the pelvic peritoneum's becoming diseased, as a result of an ulceration started by the pressure of an impacted mass in the dilated portion of the colon above the stricture or from the absorption of retained poisonous discharges.

Complications.—As a result of the constant straining and venous congestion, irritating discharges, etc., other forms of rectal disease—such as hemorrhoids, abscess, fistula, ulcer, fissure, and pruritus ani—will be produced, and they cannot be satisfactorily cured until the strictured condition has been relieved.

External Appearance of the Anus.—A casual glance at the anus of one who has been suffering for a considerable time with stricture will be sufficient to convince us that we have to deal with a stricture or some other serious rectal disease, as *cancer* or both. The anus will be open, the sphincters loose and flabby, and the patients have scarcely any control over the feces when once they pass the stricture. Numerous vegetations, tags, and flaps of superfluous skin are to be seen on every side, or, possibly, an eczema and long, deep cracks, which radiate from the anus in every direction and which produce an irritable itching. In conclusion, we desire to recapitulate, briefly, some of the more common symptoms and complications that might be expected in a case of stricture of the rectum. They are:—

1. Constipation.
2. Diarrhea intermittent with constipation.
3. Intense and almost constant straining.

4. Feeling as if the bowel never completely emptied itself.
5. Hectic fever.
6. Indigestion.
7. Tympanites.
8. Loss of sphincteric power.
9. Discharges of blood, pus, and mucus. (Coffee-ground stools.)
10. Pain reflected to other portions of the body.
11. Change in size and character of the feces.
12. Obstruction of the bowel.

Diagnosis.

When the stricture is located within two and a half or three inches (6.4 or 7.6 centimetres) of the anus, it can be diagnosed easily by simply introducing the index finger upward into the rectum until it comes in contact with the constriction. If, on the other hand, it is situated higher up in the bowel than the finger can reach, it will be very difficult to make a positive diagnosis. In these cases the surgeon has an excellent chance to test his ingenuity and diagnostic ability. At best the diagnosis must often be uncertain and surrounded with doubt. Numerous cases have been reported where persons have been treated for stricture of the rectum by well-known and reliable surgeons; yet, a post-mortem examination proved that there was none. What the surgeon thought was a stricture was, in a few cases, the promontory of the sacrum, while in others it was some one of the semilunar bands or valves of the rectum against which the bougies had lodged, giving the impression to the hand that they had been arrested by a constriction. On the other hand, it has been our experience more than once to have a bougie double back upon itself when a real stricture was present, misleading us into the belief that it had passed some distance up into the bowel. Our own Dr. Gross once said: "Stricture of the rectum is *more frequently described than observed.*" From this we infer that he had reference to the *spas-*

modic variety ; for many cases of the latter were being reported in those days. The safest and most intelligent way to make a diagnosis of stricture is by the finger if it can be reached. The finger should be passed through it. In this way ulceration both above and below can be detected, tumors pressing on the rectum located, and the exact amount of the bowel included in the constriction *measured*, and, as a rule, the character of the growth determined. In other words, we may ascertain whether it be syphilitic, dysenteric, tubercular, or malignant. A description of the malignant form will be given by Mr. Allingham in

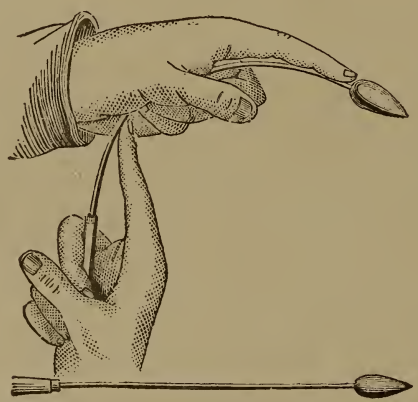

Fig. 51.—Bodenhamer's Rectal Explorer.

another chapter. When the stricture is so high that it cannot be felt by the finger, we have to resort to the use of some one of the many kinds of rectal bougies, the introduction of the hand into the bowel, bimanual and vaginal examination, or *exploratory laparotomy, which is best when there is any doubt as to the exact location or character of the disease.* For purposes of examination the conical or olive-shaped tips, fastened to a flexible piece of whale-bone (see Fig. 51), are the best bougies and are to be had in various sizes. In order that the exact size and height of the constricting ring may be determined, bougies of different sizes are passed through it until one is found that

meets with resistance, then goes through with a jerk, and produces the same sensation when withdrawn. This gives the size, and, if an elastic band is put around the bougie at the anus when the point of resistance is met, it gives the distance of the stricture above the anus. In case the passage of the olive-tipped bougie should be arrested by folds of the mucous membrane, the operator should substitute a soft-rubber one with an opening through its entire length and inject warm water through it; the membrane will then unfold and the instrument can be passed farther up the bowel. Sometimes this procedure needs to be repeated. At the same time that the bougies are being used, bimanual examination should be made to see if the disease can be located. Much information in some cases can be gained as a result of a vaginal examination. As a last resort, we are justified in introducing the entire hand into the rectum for the purpose of diagnosticating a stricture high up. It must be borne in mind, as mentioned in another chapter, that this method of examination is fraught with much danger. In endeavoring to ferret out the trouble it must be remembered that certain enlargements of the prostate, of the uterus, and sometimes tumors in and about the rectum produce symptoms not unlike those present when a real stricture exists. The differential diagnosis of benign and malignant stricture is of the utmost importance, for the treatment of the two differs very much. We cannot do better than to give the following table from Ball,* which illustrates the more important points of difference:—

DIFFERENTIAL DIAGNOSIS.

Non-malignant Stricture.	*Malignant Stricture.*
1. Generally a disease of adult life.	1. Generally a disease of old age.
2. Essentially chronic and not implicating the system for a long time.	2. Progress comparatively rapid and general cachexia soon produced.

* The Rectum and Anus, p. 169.

DIFFERENTIAL DIAGNOSIS (*continued*).

Non-malignant Stricture.	*Malignant Stricture.*
3. The orifice of the stricture feels as a hard ridge in the tissues of the bowel. Polypoid growths, if present, are felt to be attached to the mucous membrane.	3. Masses of new growth are to be felt either as flat plates between the mucous membrane and the muscular tunic, or as distinct tumors encroaching on the lumen of the bowel.
4. Ulceration of the mucous membrane may be present, but without any great induration of the edges.	4. Ulceration, when present, is evidently the result of the breaking down of the neoplasm, and the edges are much thickened and infiltrated.
5. The entire circumference of the bowel is constricted unless the stricture is valvular.	5. Generally, one portion of the circumference is more obviously involved.
6. Pain, throughout the whole course, in direct proportion to the fecal obstruction, and only complained of during the effort of defecation.	6. In the advanced stages pain is frequently referred to the sensory distribution of some of the branches of the sacral plexus, due to direct implication of their trunks.
7. Glands not involved.	7. The sacral lymphatic glands can sometimes be felt through the rectum to be enlarged and hard.

Prognosis.

The prognosis of stricture is invariably *unfavorable*, so far as a cure is concerned, unless it be a very slight one, situated near the anus, and uncomplicated by constitutional disturbances. Such a case is rarely seen by the surgeon, for the reason that it has not created sufficient pain and annoyance to cause the patient to think he has need of a physician. The history of a case of stricture is that the patient is getting worse and worse, changing from one doctor to another, never satisfied with the treatment he is getting, believing that the physician is after "filthy lucre" and not a cure. Thus, on and on he goes until he becomes the most miserable creature in the world and death

finally relieves him. We cannot be too cautious in the prognosis of cases of stricture, and we should inform patients thus afflicted that they will, in all probability, never be well again; but if they are willing to place themselves in our hands and will follow out all instructions for weeks or months to come, we can certainly prolong their lives and make them comfortable while they live. A patient who is misled into the belief that he is going to be *cured*, and who submits to a course of treatment and pays a good fee, and then does not obtain relief, will never forgive the one who has thus deceived him, and the physician who did the wrong is lucky if he get off without a suit for damages.

Treatment.

The treatment of benign stricture of the rectum should come under two distinct headings:

1. Palliative. 2. Operative.

The main indications in the treatment are to reduce chronic induration and ulceration, and to enlarge the constricted part of the bowel to such an extent that the sufferer may discharge the feces without pain or straining.

PALLIATIVE.

Palliative treatment may be subdivided into (*a*) means adopted to liquefy the feces, (*b*) means that lessen the constriction by absorption, and (*c*) means that alleviate pain and build up the system in general.

(*a*) Under this head comes *diet*, which always plays an important part in the treatment of strictures. The food should be of the most simple character, and such as will leave as little *residue* as possible. Milk stands first, and should constitute the major portion of the food; next comes rich, nourishing soups, soft-boiled eggs, and a small amount of rare beefsteak. All foods known to produce colic or flatulence should be discarded. Next to diet come *laxatives*, which are of great value, because they liquefy the feces and allow them to be discharged through

the stricture,—a thing impossible when they are of a solid consistence. For this purpose laxative mineral waters in large quantities daily are admirable. Next come mild cathartics, sulphur, castor-oil, etc. Strong purgatives are contra-indicated, though they are frequently prescribed by physicians who are not aware of the real condition of the patient. Copious injections of warm water and glycerin, however, give the quickest and most satisfactory relief to the sufferer.

(*b*) *Mercury* and *iodide of potassium in increasing doses* are usually resorted to in the treatment of strictures which are due to syphilitic deposits and other tumors where *absorption* is expected to follow medication. Medication will not be of any service where the stricture has been long in forming. Stricture caused by scar-tissue, the result of ulceration from whatever cause, is unchangeable so far as absorption is concerned. Cases where it is possible to cause absorption are materially benefited by gentle massage of the stricture with the finger, or by a suitable rectal bougie. This method will occupy our attention under operative treatment.

(*c*) Pain and tenesmus in cases of stricture at times become so great that something must be done; in fact, patients who have stricture are in constant pain and are extremely nervous. To quiet them, opium, morphine, bromides, chloral, and other hypnotics and anodynes have to be resorted to; but great care must be exercised or the patients will form habits of taking these drugs, and they seldom have will-power enough to resist these habits when once established. It is preferable, when possible, to relieve them by the local application of hot salt, flannels wrung out of hot water, or hot poultices over the anus, abdomen, and pelvis. Massage of the abdomen by gentle hands helps to break up fecal accumulations, which can then be discharged, and relieves flatulency to a marked degree. We must look after the patients' general health and prescribe tonics, such as codliver-oil, preparations of iron and malt when indicated, and their taking plenty of out-door exercise should be insisted upon.

OPERATIVE.

As a rule, palliative treatment will prove a failure in so far as any permanent benefit derived is concerned; yet much relief can be given by such treatment conscientiously carried out. The usual history of a stricture is that it goes on from bad to worse, in spite of palliative treatment, until *obstruction* takes place and some surgical procedure is resorted to for relief. None of the surgical operations yet devised will give absolute relief in all cases of stricture; yet the relief after some operations is very marked. All pain, tenesmus, diarrhea, and straining are done away with, and patients rapidly regain their former health. The following are the favorite operations for the relief of stricture at this date:—

1. Dilatation:
   (*a*) gradual; (*b*) forcible.
2. Electrolysis.
3. Internal incision.
4. Posterior proctotomy.
5. Excision.
6. Colotomy.

Dilatation.—The operation of dilatation, in some form or other, is more frequently resorted to than any other surgical procedure because it does not require the use of a knife. By the proper use of bougies, many cases of marked stricture with accompanying ulceration can be relieved and not a few cured. There has been a great difference of opinion as to which is the better method, (*a*) gradual or (*b*) forcible dilatation; some claim that the former is preferable, others that the latter is. So far as our own view is concerned, we believe that both are indicated in a given number of cases. We believe that gradual dilatation has become of greater usefulness than the forcible for the reason that it can be applied to any portion of the rectum. It is not safe to dilate the rectum forcibly when the stricture is more than two and a half inches (6.4 centimetres) above the anus, on account of the danger of *rupturing* the bowel and the setting up of a fatal peritonitis. When gradual dilatation is practiced, it is better to use a *bougie* that will pass the constriction with *ease* than one that will catch and require *force*, for the reason

that gentle friction seems to hasten absorption much in the same way as *massage* does in other tumors. When force is used inflammation and irritation may be set up that will do more harm than if the bougie had not been passed at all. There is nothing more tempting than to force a bougie through a stricture in which it has lodged. All patients treated by gradual dilatation should be warned that it will, at least, require a number of *weeks or months* to effect any permanent benefit, else they will think they are being treated for their fee only and go to some other surgeon. It is not at all necessary that the

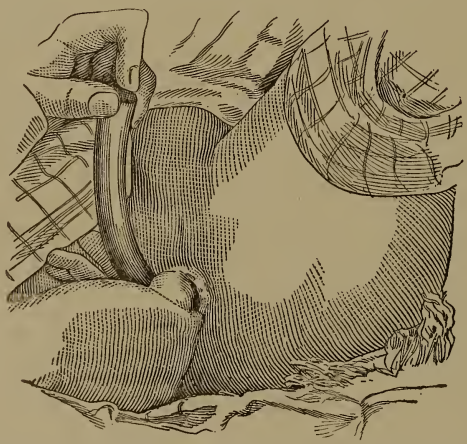

Fig. 52.—Correct Method of Introducing a Rectal Bougie.

surgeon should do all the work, especially when the constriction is in the lower part of the rectum, for the patient can be taught how to use the bougies himself. The short ones are preferable. (See Fig. 52.) They should be passed daily and left in from five to ten minutes, and the patient should be instructed to return to the office once a week to see what progress has been made. Gradual dilatation is not indicated when the constriction is within the lower two inches (5 centimetres) of the rectum, for the reason that it takes *too much time* to do any good, while with forcible dilatation we can accomplish the same in *five minutes* and save the patient much

annoyance and expense. It can be accomplished, in a variety of ways, with a Sargent, Durham, Whitehead, or other kind of mechanical rectal dilator (see Figs. 53 and 54), a Pratt

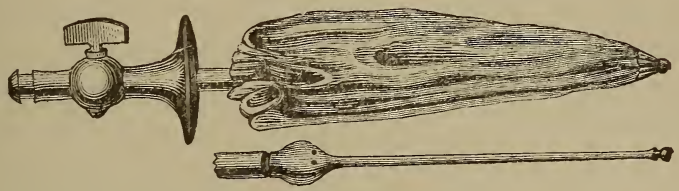

Fig. 53.—Whitehead's Dilator.

speculum, or with the fingers. Soft-rubber bougies or fingers are preferable to other means of dilatation from the fact that much damage to the rectum is likely to be done when any of the various mechanical dilators are used.

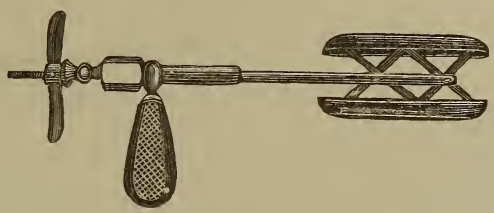

Fig. 54.—Durham's Dilator.

Bougies.—There are many forms of bougies. (See Figs. 55 and 56.) Ordinarily we prefer those about twelve inches ($3\frac{1}{2}$ decimetres) long and made of red rubber (Wales). They have an opening through the centre through which the bowel

Fig. 55.—Set of "Aloes" Hard-Rubber Bougies.

can be irrigated with medicated solutions. They can be had in any size. (See Fig. 56.) Allingham used hollow, vulcanited tubes of different sizes with a shield to prevent them from slipping into the bowel. (See Fig. 78.) For the purpose of dila-

tating the stricture, Mr. Cripps* has made twelve sizes with a slight uniform taper from base to apex, while their length probably increases from four and a half inches (11.4 centimetres) in No. 1 to five and a half inches (13.9 centimetres) in No. 12. The diameter at the base increases from one-fourth of an inch (6.3 millimetres) to one and three-eighths inches (3.5 centimetres). It is rarely necessary to have the bougie retained for more than a few moments. If it is desired to keep the bougie

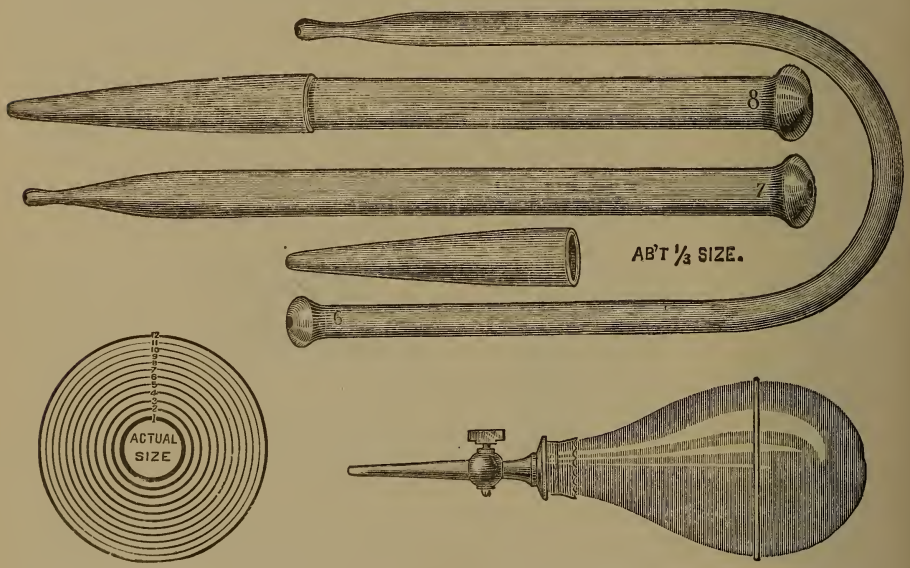

Fig. 56.—Wales's Soft-Rubber Rectal Bougies.

in for some time, it can be attached to and held in place by means of a T-bandage. Sponge and laminaria tents, inserted within the stricture and left there, will gradually dilate the constriction and will prove serviceable in some cases.

Electrolysis.—Personally, we have not had any experience with this method of treatment; but, from observations we have made of its use in causing absorption in growths and tumors in other portions of the body, we believe that very little good

* Cripps, Diseases of the Rectum and Anus, p. 244.

can be accomplished by it. We think that nearly, if not all, surgeons will concur in this belief, notwithstanding the fact that text-books on *electricity* claim that many cures have been effected by the proper use of *electricity*. It is used by means of various-sized electrodes' being passed within the rectum and the currents' being turned on; the strength of the current to be regulated to suit the case. For further information on this method of treating stricture, we respectfully refer the reader to the standard works on *electro-therapeutics*.

Internal Incision. — This consists in passing a probe-pointed bistoury into the rectum and incising the stricture in one or more places as indicated. When the stricture is *annular* or due to a fibrous band stretching across some portion of the bowel within two inches (5 centimetres) of the anus, this method will prove sufficient in many cases, if proper attention is paid to the after-treatment. The *internal division* of stricture is generally condemned because of the frequent occurrence of septic disturbances, abscesses, and fistulas following the operation, thought to be the result of *improper drainage*, and also to the danger of concealed hemorrhage. Owing to these dangers, it should not be performed in cases where a considerable portion of the bowel is constricted and ulcerated. The following case was suited to this operation, as the result will show:—

CASE XVIII.—STRICTURE DUE TO A MUSCULAR BAND.

A lady, aged 27 years, who had been suffering from stricture for two years, complained of the ordinary symptoms, except ulceration. Examination revealed the presence of a narrow, circular band one-fourth of an inch (6.3 millimetres) in thickness, about one and a half inches (3.8 centimetres) above the anus, extending entirely around the rectum. This was divided behind, before, and on both sides, and the rectum cleansed. The after-treatment consisted in passing a bougie (full sized) twice a week for two months, when she was discharged cured. Several months afterward she informed me that she was entirely relieved.

I have treated a number of other cases uncomplicated by extensive ulceration with fair success. When accompanied by

ulceration, a hollow tube (see Fig. 77) should be left in to insure perfect drainage and to guard against concealed hemorrhage.

Posterior Proctotomy.—This operation has been revived and popularized by Verneuil, of Paris, and is sometimes given the name of linear or external proctotomy. This method of treating stricture has not as yet been received with much favor by surgeons in general, but it is gaining friends every year. We now find prominent surgeons, as the Allinghams (Sr. and Jr.), Van Buren, Kelsey, and Cripps, advocating it in cases of threatened obstruction, accompanied by extensive ulceration, as the best operation, barring colotomy. On the other hand, we find that Mathews† gives preference to the simple division of the stricture at different points. In our own experience we have found that posterior proctotomy has many advantages over the internal division, and that it is a valuable substitute for colotomy in all bad cases of *non-malignant*, *ulcerating* stricture.

Advantages of Posterior Proctotomy.—1. It permits of free drainage through the deep triangular incision. 2. Any hemorrhage that might occur can be readily detected and arrested. 3. It allows the free discharge of accumulated feces and immediately does away with all straining, pain, diarrhea, and tenesmus. 4. It admits of free irrigation and medication both above and below the stricture.

It has been our practice to perform this operation after the following manner: With the patient in the lithotomy position, the limbs well flexed and held in position by means of Clover's crutch (see Fig. 68), the anus and surrounding parts are cleansed, shaved, and the rectum irrigated. We then select a straight, probe-pointed bistoury of good length, which is placed flat upon the finger and introduced within the anus and passed upward until the constriction is felt; then the knife is thrust through it and made to pass backward to or near the sacrum. It is then withdrawn, cutting the stricture and all intervening

† Mathews, Diseases of the Rectum and Anus. First edition, p. 356.

tissues, including the sphincters, downward and outward to a point opposite to the coccyx, thus making a long and deep triangular cut. If on examination it is found that all the constriction has not been severed, the operation is repeated.

The rectum is then irrigated with a sublimate solution of 1 to 5000, the incision packed with dry iodoform gauze, and the patient placed in bed, to have one-fourth grain of morphine hypodermatically at bed-time if suffering much pain.

The after-treatment consists in daily flushings of the rectum with any good antiseptic or medicated solution. The dressing is completed by the insertion of dry gauze in the wound to prevent its healing too quickly and to assist drainage. When granulations become sluggish, the application of silver nitrate or the balsam of Peru will prove serviceable. It is necessary to pass a good-sized bougie from time to time to prevent too much contraction. The following case will illustrate the ordinary history of a stricture treated by posterior proctotomy :—

Case XIX.—Stricture of the Rectum.

Male, aged 40 ; father of a large family ; history of syphilis ; had no bad habits except inveterate smoking. Several months previous to the time he came under my care he was troubled with constipation, but could obtain relief after large doses of castor-oil and Epsom salts. Later, the constipation became worse and the fecal discharges mixed with pus, blood, and mucus. He had frequent pains in pelvis, up the back, and down the limbs, and his complexion was muddy. He became ill-tempered and despondent. The strongest purgatives failed to give relief, except when assisted by copious injections of water and glycerin, and when the motion did come it was ribbon-like and never of natural formation. At this time the constipation began to alternate with diarrhea, and nothing could pass the constriction unless it was fluid or semisolid. The patient spent a large part of his time in the closet straining, never getting any satisfaction, always feeling that the bowel had not been completely emptied. He went from one physician to another, each treating for chronic diarrhea. He was treated for six months by electricity without the slightest benefit, the symptoms in the meantime becoming more and more exaggerated until immediate obstruction was threatened. Then the family physician was called ; he made a digital examination

and discovered a stricture, two and a half inches (6.4 centimetres) above the anus, which was so tight that the smallest-sized rectal bougie could not be passed through it. I was then called in to make an examination. By palpation I found that the sigmoid and the descending colon were filled with impacted feces. It was decided to do the operation now under discussion and a proctotomy knife was passed through the constriction and then backward until its point came into contact with the bony structures, downward and outward to the tip of the coccyx, including the sphincters. All ulcers, both above and below the stricture, were curetted and a silver solution applied. The after-treatment was carried out as previously described. Two weeks from the time the operation was performed the patient left the hospital and came to my office twice a week to have the bougie passed. At the end of the sixth week he went on the road as a commercial traveler, armed with a No. 12 Wales bougie, which he passes from time to time. One year from the time I first saw him, he told me that he had practically no further trouble. It is my desire to record this case on account of the marked benefit derived from the operation. At the same time, it is with regret that I am forced to state that in a very large percentage of the cases of stricture treated by *this* or *other methods* short of colotomy such good results cannot be obtained, but that the operation of posterior proctotomy will always afford as much immediate relief as any other.

Excision.—Excision is more frequently practiced as a secondary operation after colotomy has been performed for malignant stricture than for benign stricture of the rectum. We have, in two cases of stricture, removed that portion of the rectum involved and brought the remaining portion down and stitched it to the skin. In the first case the result was perfect; but, in the second, union of the skin and mucous membrane failed to take place, leaving a circular band of ulceration that required months to heal, and, when it did heal, considerable constriction followed and the patient was in almost as bad a condition as when he came to us for treatment. From this time on we shall not attempt the cure of a simple stricture by excision, for the reason that, in linear or posterior proctotomy, we have an operation that will give just as much relief and the danger is less.

Colotomy.—That colotomy is the best of all operations yet

PLATE XI. ARTIFICIAL ANUS SHOWING ONE OPENING INTO THE RECTUM
AND THE OTHER INTO THE DESCENDING COLON

Bunk & McFetridge ... th Phila

devised for the immediate relief of a bad stricture, benign or malignant, cannot be denied. It has been our good fortune, in a number of instances, to see patients who were almost dead from exhaustion, as a result of the incessant diarrhea, tenesmus, and pain, restored to comparatively good health and usefulness in a short time after a colotomy had been made. After colotomy has been performed any impacted feces in the colon, sigmoid, and upper part of the rectum can be dissolved and brought away by copious injections of water, oil, and Castile soap. After this all the feces pass out at the artificial opening, leaving the rectum free and clean. Any ulceration present can be made to heal by medicated solutions passed through the rectum and out at the opening in the groin. The benefit of this at once becomes obvious. In case the ulceration and stricture are cured the opening in the groin can be closed. The surgeon will rarely be called upon to do this, from the fact that patients do not wish to take any chances of having to go through their former suffering. Most of them wear a truss similar to that worn for hernia, and go about their ordinary duties and say that the artificial anus causes them very little annoyance. The manner of performing colotomy will be discussed by Mr. Allingham in another chapter.

ILLUSTRATIVE CASES.

Case XX.—Stricture of the Rectum, with Almost Complete Obstruction.

Mrs. A. was referred to me by Dr. B. to be treated for stricture of the rectum. She gave the following history: Said she was 30 years old and that her family history was good. I could get no positive evidence that she had syphilis, though I suspect that her husband is being treated at present for this disease. She first noticed that there was something the matter with the rectum two years before I saw her; at this time she had a hemorrhage from the rectum following an attack of constipation. After this the constipation became worse; the feces were not of natural formation, but always small and nodular or soft and ribbon-like, and were expelled with difficulty after much pain and straining. Later the constipation gave way to diarrhea, forcing her to spend the major portion

of her time in the closet endeavoring to empty the bowel. The liquid portion of the feces was readily discharged and the solid portion seemed to remain. The contents, when expelled, were streaked with blood or pus, and when she left the closet the bowel felt as if it had not been completely emptied. In brief, she had all the symptoms that usually accompany a stricture of the rectum.

Examination.—On making a digital examination I detected a stricture two and one-half inches (6.4 centimetres) above the anus, the edges of which were ulcerated and the whole rectum was saturated with a foul discharge. The constriction was so tight that a No. 4 Wales bougie would not pass it. I warned her of the danger of obstruction, it now being six weeks since she had passed any solid feces, the colon and sigmoid being packed with them. Colotomy was advised; she declined; and instead I performed *linear proctotomy*, but told her the relief would be only temporary. For three months she did well, but at the end of one year she came back and said she was willing to have the other operation performed if it would give her permanent relief from the pain and straining.

Operation.—An incision was made, one and one-half inches (3.8 centimetres) long, a little above and two inches (5 centimetres) to the inner side of the anterior spine of the ilium; the peritoneum was opened and stitched to the skin. The descending colon was located without difficulty and brought outside. The mesentery being long, it was thought best to remove a considerable portion of the colon as a preventive to a prolapse. Accordingly, the gut was pulled up from below until it was taut, and the same way from above. This left about eight inches (2 decimetres) on the outside. A supportive stitch was then passed through the mesentery near the gut on one side of the loop, and the same way on the other, thus including all the mesentery; it was then passed back through the skin of the same side and tied. The two portions of the gut forming a loop were thus brought in contact. This insured a good spur. Several interrupted sutures were taken to fasten the loop of the intestine to the abdominal wall. The dressing consisted in covering the gut and abdomen with oil-silk smeared over with vaselin, covered with iodoform gauze and cotton; over these a snug bandage was applied and the patient put to bed. She came out of the anesthetic nicely in half an hour and was suffering very little. I did not see her again until 11 o'clock at night,—some eight hours after the operation. The nurse informed me that she had been vomiting, but otherwise she had been very comfortable. I make it a rule in all colotomy cases to *remove the bandage every time I see the patient*, to be certain all is well. When I did so in this case I found the abdomen covered with coils of the small

intestines—several feet in all—that had slipped out beside the colon, where a stitch had given way. They were still warm, for the reason that the oil-silk had retained the heat. I immediately bathed them with carbolized water, replaced them, and packed the opening with gauze to prevent a recurrence of the prolapse. The next morning her pulse and temperature were normal and continued so until she was discharged. The first two days she suffered some from gas, but received immediate relief on the third day, when that portion of the colon outside was removed. (See Fig. 57.) From this time on her recovery was uninterrupted, but was delayed somewhat on account of the retraction of the gut. At this time—one year since the operation—she is perfectly comfortable, her bowel acts once a day, and the ulceration, which is much improved, is being treated by irrigation and local applications both from above and below. I report the case to call attention to the importance

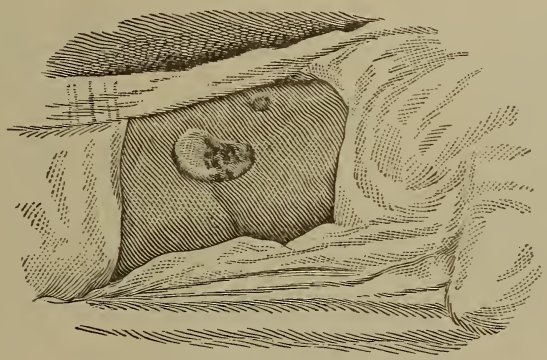

Fig. 57.—Appearance of Gut Before Removal.

of removing the bandage frequently to see that none of the intestines protrude, for there is no doubt in my mind but that I saved this patient's life by taking this precaution. The accompanying illustrations will show the appearauce of the gut before it was excised and of the artificial anus at the present time. (See Fig. 58.) The lower opening is almost closed and the upper very much reduced in size, due to vicious cicatrization that so often follows operations on negroes.

Case XXI.—Stricture of the Rectum.

Mr. S. W. came to me suffering from the usual symptoms of stricture of the rectum,—diarrhea, straining at stool, reflected pains, etc. Digital examination revealed the presence of a well-marked stricture that seemed to be of a cicatricial nature, two inches (5 centimetres) above the anus. It was so tight that I could not get the end of my index finger through

it; immediately below the constriction the rectum was ragged and indurated from ulceration.

Treatment.—It was thought best te do a posterior proctotomy. The patient was anesthetized and placed in the lithotomy position, and the rectum irrigated. A probe-pointed bistoury was selected and guided to the strictured point by the finger, and then passed up until well above, then backward and downward as previously mentioned. This left a deep, triangular wound that would readily admit the hand. The incision was followed by a gush of blood, which continued to flow freely until the ulcerated spots had been curetted and the rectum tightly packed with iodoform gauze and cotton and supported by a T-bandage. The after-treatment consisted in daily irrigations with a bichloride solution, after

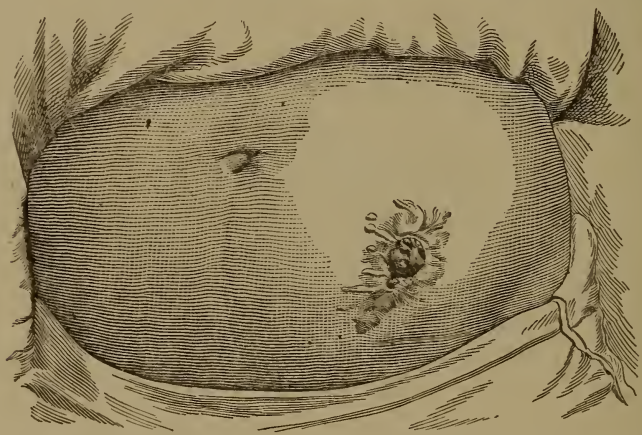

Fig. 58.—Appearance of Artificial Anus One Year After Operation. Opening into Rectum Partially Closed as the Result of Vicious Cicatrization.

which the wound was loosely packed with the gauze. Every other day a No. 12 Wales bougie was passed to prevent contractions taking place to an undesirable degree. From the end of the first week after the operation he had no pain and all of the local symptoms had disappeared. At the end of a month he left the hospital, could retain feces, and had only one well-formed motion daily. He was warned that if he did not pass the bougie regularly another operation would be required.

Case XXII.—Stricture due to Fibrous Band.

Miss L., with the usual symptoms, was referred to me by a neighboring physician to be treated for stricture. I detected the constriction one and a half inches (3.8 centimetres) up the bowel. The latter seemed

normal in other respects. The constriction had not been produced as a result of ulceration as in the previous cases, but was due to a band which appeared to be made up of fibrous tissues about half an inch (1.3 centimetres) thick.

Treatment.—I thought this a suitable case for gradual dilatation, for the young lady was in no hurry and preferred this method to a more radical one. She was instructed to call at my office every other day. On the first day a No. 6 Wales bougie was passed with some little difficulty; at the end of the first week a No. 8 could be passed; at the end of the third week a No. 10; by this time she was much relieved and was having only one action daily, and that with very little inconvenience. Six weeks from the time the treatment was started I could easily pass a No. 12, the largest size, without causing acute pain. All pain ceased and she felt perfectly well. She was discharged with instructions to call at the office and have the bougies passed if she noticed any tendency to constriction.

CHAPTER XVI.

HISTOLOGY, ETIOLOGY, DIFFERENTIAL DIAGNOSIS, AND PROGNOSIS OF HEMORRHOIDS.

We believe, with Bodenhamer, that there is no disease within the whole range of medical literature which has a more ancient history, which claims a hoarier antiquity, and a more conspicuous sacredness than hemorrhoids. Frequent reference is made to them in the Bible. The first recorded mention is in the first book of Moses, where he threatens his people for disobedience. The twenty-eighth chapter of Deuteronomy, twenty-seventh verse, expresses the following curse: "The Lord will smite thee with the botch of Egypt and with the emerods." In the ninth verse of the fifth chapter of I Samuel we shall find that the men of Ashdod, Gath, and Ekron were afflicted with a plague: "They had emerods in their secret parts." Psalm lxxviii reads: "And he smote his enemies in the hinder parts." The term hemorrhoids, as described by the Greeks, literally means a flow of blood, and was coined by them to denominate a *hemorrhage* coming from the veins of the rectal portion of the large intestine. Galen interpreted the term *hemorrhoids* to mean a passive and not an active hemorrhage. Some authors define hemorrhoids as being vascular swellings situated near the anal termination of the rectum. Others use the term to designate peculiar tumors of the rectum and anus, whether accompanied by hemorrhage or not. At the present day all agree that the term does not convey a *correct idea* either of the seat, nature, or cause of the disease. Yet, for ages past the term hemorrhoids has been understood as pertaining to certain diseases about the rectum and anus; hence, the term should not be discarded altogether, though it may be scientifically inexpressive of the disease under consideration. Before proceeding farther we desire to mention the remedy employed to

relieve those afflicted with hemorrhoids in Biblical times. It seems that the Philistines sought their priests and asked them what they must do to obtain relief. They were instructed by the priests to prepare five golden images of the emerods (hemorrhoids), "which mar the land," place them in the ark of the Lord and return the same as a tresspass offering to the Israelites from whom they had taken it. This they did and were accordingly healed (I Samuel, sixth chapter). It seems that none were exempt, old, young, rich, or poor. The same might be said of the hemorrhoids at the present day. This malady will in all probability be handed down to succeeding generations, if they are subject to the same natural laws, for in all ages the same causes produce the same effects.

Among the number of diseases to which we are liable there are none more common, few so tedious and annoying or more acutely painful, than hemorrhoids, or piles. The disease is so prevalent in this country that, until it attains an aggravated condition, persons do not deem it of sufficient importance to consult their medical advisers; they are content either to use the nostrums of some reputed quack or such local applications as are recommended by a neighbor who has been relieved. Others defer seeking medical aid from the fact that they are ashamed to submit to an examination; and still others do so laboring under the belief that the disease is incurable.

Classification.

For hundreds of years past hemorrhoids have been broadly divided into two varieties:—

1. External. 2. Internal.

This classification is based on pathological facts. Piles are called *external* when the skin alone is involved and the tumor is external to the external sphincter muscle, while the *internal* commence in and are covered by the mucous membrane. It often happens, in long-standing cases, that internal piles protrude

outside the anus, yet, when they are returned into the bowel, they will remain for a short time, at least; but the external cannot be pushed up into the bowel. Should only a portion be returned while the other remained on the outside, it might properly be termed a *combination* pile; but it should be treated like the internal variety. It is very important that a correct diagnosis be made, for the treatment suitable for the one is contra-indicated in the other. The difference in color is well marked; the external has a purple tint and an irregular surface, while the internal has a smooth, shining surface, either red or claret colored.

Etiology.

When we enter into the study of the causation of this disease we at once find ourselves confronted with an almost unlimited number, which have been mentioned from time to time. It at once becomes apparent that neither sex nor station in life is a bar against its ravages; the weak and strong are equally subject to it. It then behooves us to search for one common cause that is likely to produce the same condition under the varying circumstances and conditions of life. The prevailing opinion would indicate the cause to be an anatomical one. This we are inclined to believe is correct. Yet we are free to say that we are not exactly positive as to just what this cause is. We are inclined to the belief that there is more than one factor entering into it. The erect position man occupies may, from gravity alone, be conducive to piles, for, as Van Buren very correctly says, "There is no disease among quadrupeds which might be likened unto them." It certainly looks plausible that the erect posture might, at least, be a factor in the production of this common disorder. Again, the rectum is abundantly supplied with veins which enter into the formation of the hemorrhoidal plexus. A portion of this blood is returned through the internal iliac to the inferior cava, the rest by way of the inferior mesenteric to the liver; and these veins, like others of the portal system, have no valves. The branches of

the superior hemorrhoidal veins in their journey upward pass through little slits in the muscular wall, and therein, Verneuil claims, is to be found the cause of this disease. He believes that the dilatation is due to the obstruction of the calibre of the veins from the muscle's contracting on them as they pass through it. While this anatomical fact undoubtedly tends to dilatation under certain conditions, it does not seem to us to be sufficient, of itself, to account for the enlargement of the veins in all cases. We know that the rectal and anal plexuses have no valves, and, further, that when a patient afflicted with prolapsed piles is requested to strain down, the piles at once become engorged with venous blood as a direct result of the pressure of the abdominal muscles. It is not at all unreasonable, then, to suppose that the pressure from the above muscles on the blood-column or the pressure from a pregnant uterus or some pathological growth might be productive of hemorrhoids by interfering with venous circulation. We will now mention some of the more common causes of this disease—such as morbid growths of liver, spleen, uterus, ovaries, and prostate—which cause venous obstruction. Again, we have other causes—as constipation, stone in the bladder, urethral obstruction, and purgatives—which are conducive to piles from the intense straining which they induce. Congestion of the liver, obstructive diseases of the heart, improper diet, and irregular habits, as well as inherited predisposition, may all be said to be productive of this very common and annoying disease. Nearly all railway employés have this disease, as a result of irregularities in living combined with the irregular jarring motion of the train.*

Differential Diagnosis.

Hemorrhoids have at different times been mistaken for a number of other rectal disorders. The following are the diseases which resemble hemorrhoids most :—

* See chapter on "Railroading as an Etiological Factor in Rectal Diseases."

1. Polypi.
2. Villous tumors.
3. Malignant growths.
4. Venereal warts.
5. Prolapsus.
6. Pruritus ani.
7. Hemorrhages.

Polypi can be diagnosticated from hemorrhoids by their soft, smooth, elastic feel, pyriform shape, and long, slender pedicle.

Villous tumors are known by their broad base, slow growth, spongy feel, dark-red color, and frequent hemorrhages.

Malignant growths in the early stage present a number of hard nodules on the side of the rectal wall; at a later date they become larger and break down, after which the diagnosis is made without difficulty.

Venereal warts can be distinguished by their large number and circumscribed location. They are soft, pedunculated, fragile, bifurcated, of a dark-red color, and give off a very disagreeable odor.

Prolapsus involves the entire circumference of the bowel, while piles are distinct, localized tumors, situated on the side of the bowel. The prolapsed tumor is cone-shaped, with a slit in the centre, and has a velvet-like appearance.

Pruritus ani is frequently called itching piles. There is no pathological reason for this, since there is an absence of both *tumors* and *hemorrhage*, while the itching is caused, in a large percentage of cases, from some irritating discharge from the rectum, thread-worms, and neuroses or eczema of the skin.

Hemorrhages of all kinds, coming from the rectum, are usually attributed to bleeding piles. In many such cases we have demonstrated to the class the entire absence of piles; the bleeding is due to ulceration, injury, fissure, etc.

Prognosis.

The prognosis will prove unsatisfactory in many cases where topical applications are relied on exclusively. On the other hand, when piles are properly and radically dealt with, the results will be surprisingly gratifying in almost every case.

PLATE XII- THROMBOTIC HEMORRHOIDS

CHAPTER XVII.

EXTERNAL HEMORRHOIDS.

These are tumors which appear on the outside and just below the anal margin; they are always covered by integument. They are so common that few persons arrive at middle age without having suffered from them. Nearly all swellings appearing about the anal margin are designated by this term. This disease is no respecter of persons; it attacks alike the robust, the weak, the rich, the poor, the old, the young, the active, and the inactive. External hemorrhoids are divided into two classes:—

1. Thrombotic. 2. Cutaneous.

Thrombotic.

Thrombotic or venous piles consist of elevations of the skin near the anal margin, oval in form and of a livid color, or slightly tinged with blue (see Plate XII), filled with a *hard clot* of blood inclosed in a sac. The amount of pain depends upon the inflammation. When the latter is slight no inconvenience will be felt other than a sense of heat and fullness. On the other hand, if the veins and surrounding tissues become actively *inflamed*, the pain will be very severe and will continue so until the clot is turned out or suppuration takes place. These tumors form quickly, and usually present themselves during the act of defecation following an attack of constipation necessitating great straining. They have the appearance and feeling similar to that of a *bullet* beneath the skin, and they are usually single, though we have frequently seen two, three, and as many as six present at one time. They occur as the result of excessive eating, irregular habits, and anything that is conducive to constipation.

SYMPTOMS.

There is usually a sense of fullness and heat, throbbing pain, tight sphincter, with irresistible tendency to strain, and sometimes an itching sensation. When inflammation is present to any degree, the patient will be uncomfortable in any position he may assume. He may also have a slight elevation of temperature, which makes him restless and entirely unfit for business.

Cutaneous (Hypertrophied Skin).

This variety consists of hypertrophied prolongations of the skin. Cutaneous piles are frequently a result of the other variety, a fold of skin being left after the clot has been outturned or absorbed. They may be single or multiple, but usually retain the natural color of the skin, which has become thickened. They are much aggravated by improper diet, irregular habits, and uncleanliness.

SYMPTOMS.

Unless they become irritated or inflamed they will cause little inconvenience; and, in fact, some persons go all through life with them and suffer very little by taking proper care of themselves. When people neglect to take care of themselves, the piles frequently become acutely inflamed and cause much pain and annoyance until they are removed. In many cases we have observed the pain reflected to neighboring organs and down the legs to the feet, producing some very interesting reflex phenomena that might be mistaken for the disease of a neighboring organ.

Treatment of External Hemorrhoids.

The treatment of external piles is simple and the results are favorable. It should be both *palliative* and *operative*. The latter is always to be preferred unless the patient refuses to *submit* to a trivial operation. In such a case much relief is to be had from the use of certain palliative measures presently to be discussed.

Palliative.—In all cases the attention should be paid to the diet and errors corrected in the same. Highly-seasoned food and stimulants, such as tobacco, whisky, wines, and beer should be discouraged, and a simple diet substituted. The bowels should be kept open by the use of Vichy, Hunyadi, Freidrichshall, or some other reputable mineral water. If there are symptoms of a congested liver, a few calomel parvules, one-tenth of a grain, or the blue pill properly administered will prove beneficial. Frequent hot baths should be taken, and the anus washed with Castile soap and water. If the pile belong to the first variety, containing a hard clot, frequent applications of an ointment composed of

℞ Morphinæ sulphatis, ... gr. iij (0.195 gramme) ;
Hydrargyri chloridi mite, . . . gr. xij (0.78 gramme) ;
Vaselini, ... ℥j (31.00 grammes) ;

will soothe the parts and reduce the inflammation. The old-time lead-and-opium wash, either hot or cold, applied constantly, will afford great relief. We use it in the following proportions :—

℞ Liquoris plumbi subacetatis, ... ℥iv (15 c.cm.) ;
Tincturæ opii, ... ℥iiss (10 c.cm.) ;
Aquæ dest., ... q. s. ad ℥iv (120 c.cm.).—M.

The lead solution mixed with the sugar of milk forms a very soothing application. Hot poultices of any kind, if applied constantly, will prove valuable in relieving pain and reducing inflammation when present in either variety of external piles.

Operative.—In the thrombotic variety the tumors should each be incised, the clot turned out, and some escharotic applied to the inside of the pile to insure the closing of any rent in the vein. The patient should then be placed in bed to remain there for several hours to prevent the tumors' filling up again. We use a sharp-pointed bistoury to make the incision, and often apply the Paquelin cautery to the rent in the vessel. This treatment has always proved satisfactory in our hands. The incision should be kept open by the insertion of a small pledget of cotton. The surgical treatment of the *cutaneous variety* differs some-

what from the one just referred to, in that the tumor is seized with a pair of catch-tooth forceps and then snipped off with a pair of curved scissors, care being exercised not to remove any more of the skin than is absolutely necessary, lest too much contraction follow the operation. When there is considerable space left between the edge of the skin and the mucous membrane, it is best to unite them by catgut sutures. If the sphincter has been previously thoroughly divulsed, little pain will follow the operation. When there is only one tumor and that small, it can be removed with comparatively little pain after an injection into it of a 6-per-cent. solution of cocaine. It does not make any difference to us, from an operative point, whether the pile is inflamed or not, for we always operate on all piles just as soon as we obtain the patient's consent. We do not believe in *palliative* measures except when we are not allowed to operate. Cases of stricture from operations for external hemorrhoids have been reported, but we have never had but one follow an operation that we are aware of. We beg once more to caution the reader not to remove the entire tumors when swollen. When a large raw surface is left after the removal of swollen tumors, the pain will be severe, healing may be delayed, and possibly stricture may follow.

ILLUSTRATIVE CASES.

Case XXIII.—External Hemorrhoids (Thrombotic Variety).

A gentleman called at my office early one morning and asked me to call to see Dr. J., who was suffering from an attack of piles. I responded promptly, and found the doctor in bed, groaning and rolling from one side of the bed to the other. On inquiring what was the matter, he said his piles were down and strangulated. I requested him to get into the Sims position and proceeded with the examination, which revealed the presence of two thrombotic piles closely hugging the anus at the muco-cutaneous junction. They were round, hard, dark-blue in color, and felt and looked like two bullets beneath the skin, around which the sphincter was tightly contracted. I informed him that the quickest way to get relief was to have them transfixed with a knife and the clot turned out. He said he was willing to do anything to get relief. A

solution of cocaine (6 per cent.) was applied to the tumors for five minutes to deaden the pain; then, with a sharp-pointed, curved bistoury, I slit each in turn and scraped the clot out with a small curette, causing him very little pain. The relief was so great that he dozed off to sleep within fifteen minutes after the operation was completed. The edges of the incision were kept apart by a piece of gauze inserted into the pile to act as drainage and to prevent its refilling. The next morning he was able to make his calls with comfort, and never had a relapse.

CASE XXIV.—EXTERNAL HEMORRHOIDS (THROMBOTIC VARIETY).

Dr. S. called at my office to be examined for rectal disease. He complained of very considerable pain, spasm of the sphincter, and sensations of heat and fullness about the anal margin. He first noticed that there was something wrong immediately after he had an action, some hours before. Examination revealed a large, hard, bluish-looking tumor at the anal margin. A diagnosis of thrombotic pile was made, the tumor incised and the clot turned out. I suggested that it would be best for him to rest quietly in bed for the remainder of the day, but he replied that urgent business demanded his attention and he would be unable to do so. The next morning I was not much surprised when the doctor walked into the office and remarked that the pile had refilled and was as painful as before. He was again placed on the table and the pile incised as before, and a small pledget of cotton left in the incision. He immediately returned to his residence, where he remained quiet for several hours, when he resumed his usual duties and had no further trouble.

CASE XXV.—HEMORRHOIDS (CUTANEOUS VARIETY).

I was called in consultation to see Mr. W. C., who was suffering from piles and gave the following history: Age 42; fireman; had always been perfectly healthy until his present illness, except that he was badly constipated and always had to take a cathartic to move his bowels. He was irregular in his habits and drank quite freely of alcoholic stimulants. He first noticed that he had piles a week before he came to me. He complained of pain, heat, and swelling about the anus, and said that for two nights he had been unable to sleep on account of the anus's jerking. He was extremely nervous and his face was pinched in evidence of his suffering. The pain was of a drawing, burning character. I placed him on a lounge in a good light, and, on separating the buttocks, two very large, external, cutaneous piles presented themselves. They were very sensitive, red, and acutely inflamed. He was informed that an operation was the quickest and most satisfactory way to get rid of them. He objected to having it done, and said that time was no object. The first thing I did

was to order a saline cathartic to be given every morning to insure a free action. Hot flaxseed-poultices moistened with laudanum were applied to the tumors, with instructions for them to be made fresh every half-hour, for a cold poultice does more harm than good. Within an hour he was fairly comfortable. During the night he awoke a number of times when the sphincters would contract, but soon went to sleep again. On the following morning the tumors were less sensitive and very much reduced in size, and he wanted to sit up. He was requested to remain quiet in bed, and the poultices were continued for twenty-four hours, when they were discarded and the ice-bag substituted. On the fourth day from the time treatment was instituted the tumors had all shriveled up and were nothing more than hypertrophied folds of skin, which could be handled without causing any pain, and he resumed his daily avocation.

Case XXVI.—External Hemorrhoids Complicated with Fissure.

A friend of mine called at the office and asked me to drive out with him to see his wife, who was suffering from some rectal trouble. When we entered the room she was lying on the bed, apparently perfectly comfortable, when she proceeded to give me a history of her case. She was 32 years old, of a nervous temperament; none of her family had ever died of tuberculosis, and her health had always been good, barring habitual constipation, which sometimes caused her to feel dizzy and have sick-headache. She had never suffered from any rectal trouble until her present attack, which she dated back to the previous week. At this time her bowels moved and the feces were large, hard, and nodular, and much straining was indulged in before she was able to discharge them. When she did, she felt a sharp, shooting pain, which remained several hours in the region of the coccyx. Ever since then there had been sensations of heat and fullness about the rectum, with now and then sharp, drawing, jerking pains. During the last two days she could feel lumps at the side of the anus which were exceedingly painful when touched, and caused her much pain unless the limbs were flexed and a pillow kept between them. On making an examination I found several cutaneous tags, one of them swollen, red, and very sensitive. On separating the anal margins I discovered an irritable fissure almost concealed within a fold of the inflamed pile. I at once advised excision of the tumors; she gave her consent, and I telephoned my assistant to bring my instruments and ether spray. He came promptly, and the spray was made to play upon all the tumors until local anesthesia was produced. Each tumor, in turn, was seized with catch-forceps, drawn down, and cut off with curved scissors; the sphincters were then gradually dilated with bougies and that portion of the fissure remaining within the anus touched with the nitrate of silver. In one week the patient was perfectly well.

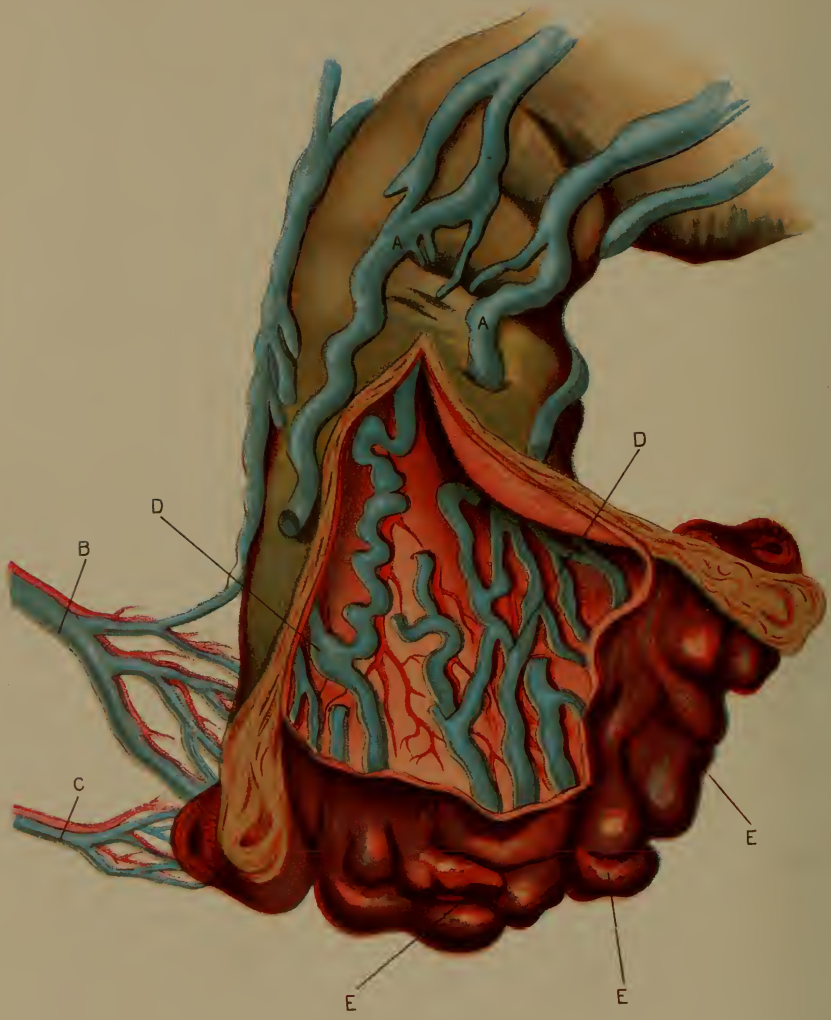

PLATE XIII-SHOWING THE PATHOLOGY OF INTERNAL HEMORRHOIDS.

A Superior Hemorrhoidal Veins.
B Middle " " " "
C Inferior " " " "
D Hemorrhoidal Plexus by removal of the Mucous Membrane
E Protruding Internal Hemorrhoids covered by the Mucous Membrane

CHAPTER XVIII.

INTERNAL HEMORRHOIDS.

Internal hemorrhoids are developed, in many respects, like the external variety, and the causes which produce the one may also produce the other. Their appearances are similar in many respects, but differ somewhat in color. The internal hemorrhoid is covered by the mucous membrane, and has a bright-red color, while the external is covered by integument. Internal piles are more serious than the others, from frequent hemorrhage. In old-standing cases they remain outside the anus nearly all the time and frequently become ulcerated, which causes the patient much pain and annoyance. It is not an uncommon thing to see both external and internal piles present at the same time, thus necessitating a combination operation to insure a good result. The internal variety is due to certain changes which take place in the blood-vessels in and beneath the mucous membrane.

Symptoms.

Some persons have internal piles for years and suffer little annoyance from them, while others suffer greatly from the first. We have frequently seen strong men and women become emaciated and nervous from an apparently simple cause,—so much so that they were totally unable to attend to their ordinary duties. We doubt if there is any other disease which causes more mental or reflex disturbances than the one under consideration. The most prominent symptom of this variety of piles is the *bleeding*, and from this fact they are frequently denominated "*bleeding piles.*" The bleeding is usually preceded by the protrusion of the tumors during the act of defecation, and may be slight or profuse. Sometimes these sufferers bleed until they faint and fall over in the closet. When the piles are not inflamed, the only inconvenience will be a sensation of heat and

fullness; but when the tumors become swollen or strangulated and the inflammation becomes active, the sphincter will alternately contract and relax on them, thus producing the most excruciating pain, which lasts until they slough off, have been operated on, or are relieved by palliative remedies. In old-standing cases the walls of the piles become tough and hypertrophied. We believe that the bleeding, in the vast majority of cases, is of a venous character, though many high in authority differ on this point.

Cripps* believes the spurting, in cases which appear to be arterial, is due to the blood's being forced as a regurgitant stream through a rupture in the vein by the powerful abdominal muscles, and we think he is correct in his theory, yet in some instances we have witnessed hemorrhages wherein the blood presented every appearance similar to that from an arterial twig. In olden times the surgeon was afraid to arrest these hemorrhages for fear that some internal disease would be developed, such as consumption or dropsy. Happily for patients, this *superstition* has almost disappeared. We believe that the bleeding does not seriously impair the health of certain plethoric individuals, yet the annoyance is so great that, even in such cases, we have never failed to see a marked improvement in their general health after the bleeding had been arrested; while in those who had become anemic the improvement was very marked and rapid.

Internal hemorrhoids may be divided into two classes, viz.:—

1. Capillary (Nevoid). 2. Venous.

Capillary.—The capillary tumors are smaller than the venous, spongy in texture, are formed by the *superficial vessels* of the mucous membrane, and resemble strawberries. They may appear alone or be present with the venous variety. They rarely protrude and scarcely ever give pain, but always bleed profusely.

* Diseases of the Rectum and Anus, p. 70.

PLATE XIV.- PROTRUDED HEMORRHOIDS WITH PROLAPSED MUCOUS MEMBRANE.

Burk & McFetridge Co Lith Phila

Venous.—This variety is of more frequent occurrence than the capillary; the tumors are large and vary in size from one-half to one inch (1.3 to 2.54 centimetres) across their bases, are

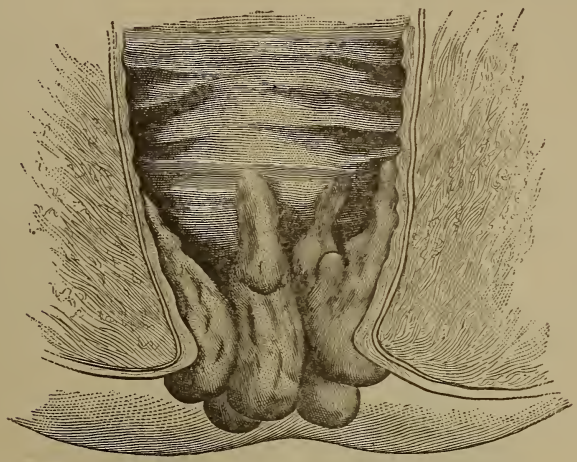

Fig. 59.—Showing Attachment of Internal Hemorrhoids.

covered by mucous membrane, have a glistening appearance, are of a bluish or livid color, and are formed as a result of a dilatation of the veins in the submucous tissue. (See Plates XIII and XIV.)

CHAPTER XIX.

TREATMENT OF INTERNAL HEMORRHOIDS.

THEIR treatment will be considered under two headings, viz.:—

1. Palliative. 2. Surgical.

PALLIATIVE.

By certain palliative measures we have rendered many patients comfortable and, in a few cases, reduced the piles altogether. When the piles are small and cause but little suffering the treatment is simple. In the first place, errors in diet and habits of living should be corrected. We have

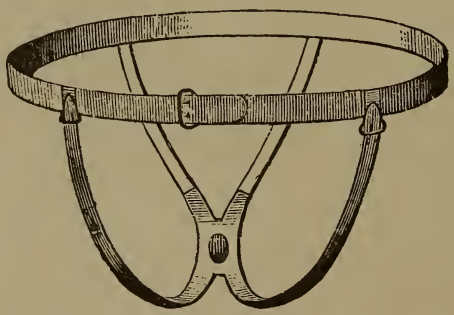

Fig. 60.—Hemorrhoidal Truss.

often seen an acute attack of piles brought on by a prolonged spree. When the piles are protruded and inflamed the patient should take the recumbent position and keep perfectly quiet, and soothing or astringent lotions and ointments should be applied constantly. When these fail relief can often be had from poultices made of flaxseed, corn-meal, and onions. The symptoms of a congested liver should be counteracted at once. When the tumors are not large and are not strangulated they can be made to contract by the application of pure nitric acid to their bases. In fact, in a few instances we have witnessed some

happy result from this treatment. If the patient must work he can get much comfort from a pile-supporter. (See Fig. 60.) The bowels should be kept in a relaxed condition at all times and the patient instructed to cultivate regular habits as to the time of going to the closet, etc. When the treatment just outlined fails to relieve suffering, the sooner radical treatment is resorted to the quicker the patient will be well.

In the palliative treatment of hemorrhoids there are two essential features: the first is to reduce the inflammation as

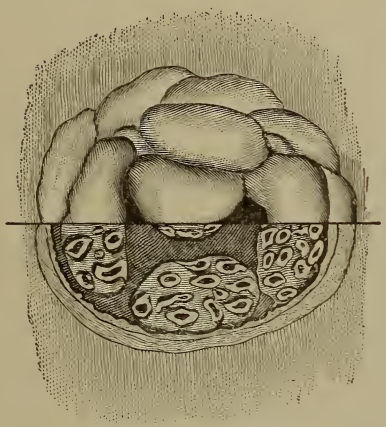

Fig. 61.—Appearance of Cross-Section of Internal Hemorrhoids.

quickly as possible, and the second is to reduce all protruded tumors at the very first opportunity.

Surgical.

In many cases the surgeon will not be consulted until the patient has an acute attack of piles, and then he will not be permitted to resort to operative procedures until all palliative measures have failed to give relief. We know that such measures do at times afford much relief, and, in a few cases, a cure. But a much longer time is required and the suffering is much greater than if an operation had been performed in the beginning. This being the case, and there being no other

complications, we advise them to undergo the trivial operation necessary for a complete cure at once, regardless of any inflammation of the piles. The aid of surgery—sought in all ages for the cure of piles—has brought much benefit to this class of sufferers. Many of the operations now in vogue were practiced by the ancients,—such as ligation, cauterization, crushing, etc., —with more or less success, but with much pain, for in those days anesthetics were not in use. When you have decided that an operation is necessary, select the one best suited to the case under consideration. We are free to say that we have no one operation that we adhere to, but always try to select the one best suited for the case under advisement. In turn we shall describe each of those most favored at the present day, but shall go into the details of such only as have recommended themselves to us as being suitable in a large number of cases.

PREPARATION OF THE PATIENT FOR OPERATION.

The general health of the patient should be looked into, and, if found to be below par, it should be corrected as much as possible. The urine should be carefully examined to detect the presence of any kidney complication. If the patient have malaria a few doses of quinine will prove beneficial; and any condition that would tend to produce a relaxation or dilatation of the blood-vessels should be remedied as well. On the morning preceding the operation two teaspoonfuls of compound licorice-powder is given to open up the bowels. One hour previous to the same the surrounding parts are cleansed, shaved if necessary, and the rectum thoroughly washed out with an injection of warm water and Castile soap. It is hardly worth mentioning that the patient has not been allowed to eat any food for several hours previous to this time. The following operations have been recommended by different writers from time to time, some of which have not met with much favor by American surgeons:—

1. Application of chemical caustics.

2. By the *écraseur.*
3. Crushing.
4. Dilatation.
5. Cauterization (1) by puncture, (2) linear, (3) by galvano-cautery wire.
6. Injection of caustic and astringent solutions.
7. Whitehead's operation of excision.
8. Ligature (Bodenhamer's modification).
9. Ligature.
10. Clamp and cautery.
11. Submucous ligation (Rickets).

APPLICATION OF CHEMICAL CAUSTICS.

Such applications are not indicated in cases where the tumors are large and protruded, but in the small, flat, *capillary variety.* The operation is simple and requires only a few moments; much dexterity is required, however, to prevent the sound tissues from being injured by the application.

Many acids have been recommended for this purpose, but nitric acid seems to outrank them all, though chromic and carbolic acids have their respective adherents. We have seen a few cases where the hemorrhages were arrested permanently, while in others they were arrested for a short period only. We well remember one case that came near bleeding to death when the slough came off, as a result of acid applied. The neighboring parts should be protected by vaselin and all excess of the acid neutralized with soda, which may be applied to the exposed pile with a brush made of cotton twisted firmly on a tooth-pick or on a glass rod. Some prefer caustic paste.

THE ÉCRASEUR.

This instrument is highly recommended by French writers. English and American surgeons, with a few exceptions, condemn it, for the reason that with either the wire or chain you cannot remove, with any degree of accuracy, the desirable

amount of pile-tissue. Sometimes too little will be removed, making the operation a failure; at another time too much, causing constriction to a greater or less degree. Of recent years we have not used it, for the reason that we have better and simpler ways of curing piles.

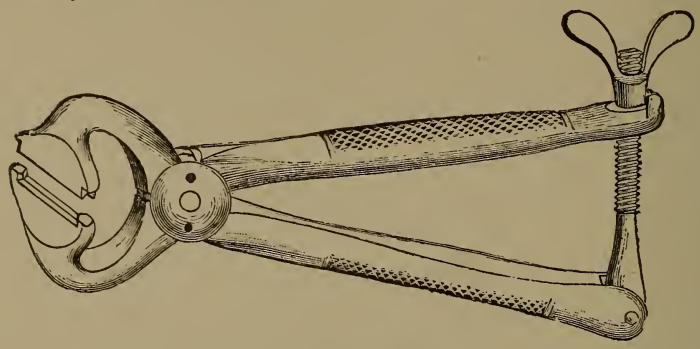

Fig. 62.—Pollock's Pile-Crusher.

CRUSHING.

While the operation of crushing piles is not extensively performed, especially in this country, it has some points that merit consideration. There is little danger from hemorrhage, and patients thus operated on require a shorter time for recovery and suffer less than from the ligature. The operation was introduced by Mr. George Pollock, in 1880; and about 1885 Allingham, Jr.,

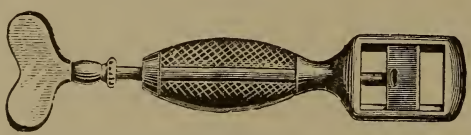

Fig. 63.—Herbert Allingham's Pile-Crusher.

began advocating it, but substituted for the pincher-like crusher of Mr. Pollock (see Fig. 62), a screw crusher, which we have seen used by him at St. Mark's Hospital with satisfactory results. (See Fig. 63.) The operation as performed by Allingham consists in drawing the pile through the crusher, which is then tightened. The projecting portion is removed with the scissors, and after twenty-five seconds the crusher is removed.

He advises its use when the piles are small and few in number only. The operation is not likely to become popular in this country, for many of our surgeons would prefer the injection method, which is suited only for that class of cases where Mr. Allingham uses his crusher. Recently a New York surgeon has advocated crushing piles between the thumb and forefinger. It seems to us that this method would only be of service when piles are in their *incipiency*, and would be beneficial for a short time only.

DILATATION.

Thorough dilatation of the sphincter muscles for the cure of internal piles comes highly recommended to us by eminent French surgeons, such as Verneuil, Gosselin, Fontan, and many others. The operation is performed by inserting the two thumbs within the anus and by gentle and constant pressure, gradually overpowering the sphincter. (See Fig. 72.) At the same time care must be used to avoid tearing the mucous membrane or lacerating the muscles. We always use an anesthetic unless the patient absolutely refuses to take it. Dilatation can be effected by the use of rubber bougies, but the bougies cause more annoyance, require a longer time, and the results are not so good. The operation of dilatation has not proven satisfactory in our hands, except in cases where the tumors were *small and the sphincters tight.* In such cases, as well as those complicated with an irritable ulcer or fissure that induces great suffering, we have always relieved patients by this simple procedure. Two days after the operation the sphincters are capable of acting, but the spasm is gone. The bowel acts freely, and the only indication of the operation's having been performed is a slight extravasation of blood about the anus. It never detains them from work more than three days.

CAUTERIZATION.

Cauterization may be used in one of three ways, viz.:—

1. By puncture (Mr. Reeves).

2. Linear.
3. Galvano-cautery wire.

Cauterization by puncturing the piles was used by ancient surgeons and has been revived from time to time. Mr. Reeves, an eminent surgeon of London, has recently endeavored to popularize this operation, but has made a failure of it. Mr. Allingham, Sr., tried it in three cases, and says that he made a failure in every one. Great pain, retarded recovery, and abscesses occurred in two, while the third was not cured. We have tried this operation in a number of cases, and our experience has been such that we shall not attempt it again, for the

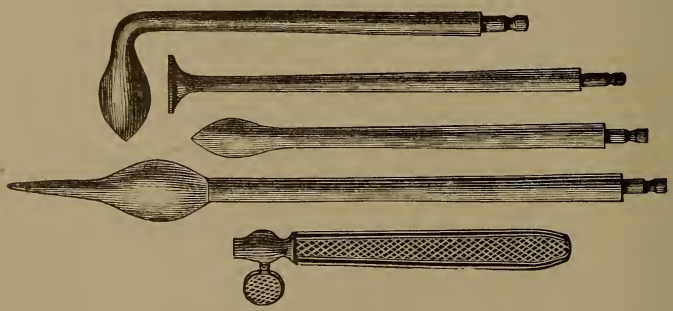

Fig. 64.—Cautery Irons.

reason that we have recourse to other operations which are accompanied by fewer complications and much better results.

Linear cauterization was introduced in 1875 by Voillemeir. He applied the cautery to the mucous membrane within the anus, before, behind, to the right and left sides of the bowel, and not directly to the piles. The parts, as a rule, were much swollen for a few days, during which time water-dressings and poultices were applied. The pain is quite severe for about four days, and the time for a cure never exceeds one month. The benefit derived is from the contraction, which is never enough to produce stricture. We have tried this method and found it to be very unsatisfactory for ordinary piles, because of the amount of pain and delayed healing. We practice linear cauterization by applying it directly to *every tumor* after the

sphincter has been thoroughly divulsed, which prevents after-pain. Our patients are never confined to bed after the second day, but are allowed to sit up in a comfortable chair, and at the end of the fifth day are discharged with instructions to return to the office twice a week, that we may apply some stimulating application to any unhealed surface. This operation is not suitable in long-standing cases where the tumors are large, numerous, and have hypertrophied walls, but will be found serviceable in cases where there are no distinct tumors, but a general dilatation of the veins on all sides of the bowel, with an inclination of the mucous membrane to protrude.

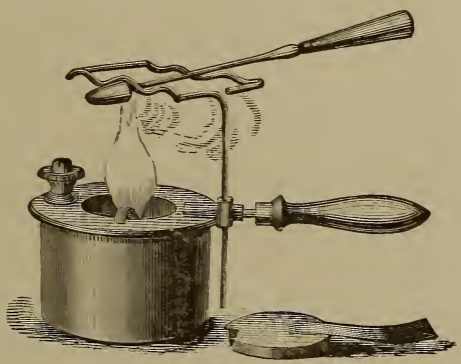

Fig. 65.—Cautery Blow-Pipe.

Galvano-Cautery Wire.—The treatment of piles by this procedure has from time to time been revived for a short while and then condemned. We have never in our experience found a case where we thought we were justified in resorting to it, principally on account of the unreliability of the batteries and because we can see no advantage that it has over Paquelin's or the actual cautery.

INJECTION OF CAUSTIC OR ASTRINGENT FLUIDS.

For a number of years the treatment of piles by the injection method was confined almost entirely to quacks, who went about the country advertising to cure them without the knife or

the necessity of the patient's absenting himself from his daily vocation. The method is supposed to have been originated by a young physician named Mitchel, a resident of Clinton, Ill., who sold his secret, and in a short time his followers distributed themselves throughout the country. It can be said, to their credit, that they made many remarkable cures, and that the treatment of piles, as well as some other forms of rectal disease, was taken out of the hands of reputable physicians and turned over to quacks. This awakened the profession to the fact that they were losing many patients who were able to pay good fees, and that if they did not expose the *fraud*, if it were one, or learn the secret, that they might give their brethren the benefit of it, the profession would be disgraced. Working on this line, Andrews, of Chicago, in 1876, obtained the secret, and, taking measures adapted to the purpose, found that his information was correct. He then communicated with a number of itinerants, and also with a number of regular physicians who had been observing their practice, and ascertained that Mitchel started out by using one part of carbolic acid to two parts of olive-oil. Some of his followers tried all kinds of astringents, but all returned to carbolic acid. Andrews says that the ingredients used were oil, glycerin, or alcohol, to which water was sometimes added. Carbolic acid was used, from 20 to 100 per cent. Out of 3304 cases treated, 13 deaths were reported, besides numerous cases of abscesses, hemorrhages, and other complications. Andrews has compiled the prescriptions used by the various itinerants in his work on rectal and anal surgery. After the publication of the method of the itinerants many reputable surgeons were overzealous in commending this method of curing piles. Kelsey published a report of 200 cases so treated, claiming that the method was easy and certain, especially in cases of long standing, and that the piles could be cured without risk, pain, or delay from business. By referring to his recent text-book on diseases of the rectum, you will see that his views have materially changed, for he says: "While

for a year I used the method almost exclusively, I now use it only in *selected* cases." One cannot help admiring the candor displayed by him in recording his changed views so manfully. The injection method has been condemned by most of the surgeons both in Europe and in America; and all agree that it is not the proper treatment for piles in general, and, when used at all, the cases should be selected with care. We heartily concur in this opinion, for we have witnessed many signal failures and much suffering from the too promiscuous injection of pile-tumors.

Class of Piles Suitable for Injection.—To be brief, we will state that *only small*, *distinct*, *pendulous* piles situated *above* the grasp of the *sphincter* muscle *should be injected*. If this rule is followed a cure will be effected without causing much suffering or any delay from business, and persons thus cured are ever thankful, and will show their appreciation by sending other patients. We never inject piles in the following conditions:—

1. When strangulated.
2. When inflamed.
3. When ulcerated.
4. When external.
5. When large and hypertrophied.
6. When within the grasp of the sphincter.

One cannot be too careful in the selection of the kind of piles to inject, for, when it is done in a promiscuous kind of way, some of the following complications are likely to arise:—

1. Much pain and swelling.
2. Ulceration or extensive sloughing.
3. Abscesses.
4. Constant spasm of the sphincter.
5. Fistula.
6. Phlebitis.
7. Pyemia.
8. Long delay from business.

9. Permanent cure not effected.

If, on examination, you find that the case under advisement is suitable for the injection method, inform the patient that there will, in all probability, be some pain for a short time after the operation, and that the operation may have to be repeated one, two, or three times, depending upon the number of piles present.

Preparation for Operation.—This consists in giving some mild cathartic the morning previous, to be followed by an injection of warm Castile soap one hour before the operation, to be sure that the bowel has been thoroughly emptied and to make the tumors more prominent. After placing the patient in the position most favorable for light, each tumor can be exposed separately and injected by the aid of a small hinged speculum. (See Fig. 4.) In performing this operation we observe the following rules:—

1. Cleanse the anus and surrounding parts.

2. Place the syringe and needle in boiling water until everything is in readiness.

3. Accurately gauge the amount to be injected.

4. Force the air out before introducing the needle.

5. Inject the fluid slowly into the *pendulous* portion.

6. Inject from two to five drops in small and five to ten in large piles.

7. Leave the needle within until the pile turns white.

8. Do not inject the tissue beneath the pile.

9. As the needle is withdrawn pressure is made with the index finger to prevent the escape of the fluid and arrest hemorrhage.

10. Promptly return all prolapsed piles.

11. Make a fresh solution for each injection.

12. Keep patient in the recumbent position for a half-hour after operation.

13. Only a fluid or semisolid diet is permitted for a few days.

14. Favor the weak in preference to the strong solutions.

15. Inject only one or two piles at a sitting.

A good light, a suitable table, an ordinary hypodermatic syringe with side-bar and needle with a long shaft, a hinged speculum, together with suitable dressings, are all that are needed in carrying out the injection method. If the syringe has an extension-piece, so much the better.

Solutions to be Injected.—Almost all caustics in the vegetable and mineral kingdoms have been tried and have their respective advocates. Space forbids our giving all the formulas which have been highly recommended; so we shall give those only which we believe will render the most effectual cure. If we had to select any one drug, we would certainly choose carbolic acid, which may be used in any strength from 3 to 100 per cent. Kelsey uses it from 15 to 35 and 50 per cent., and the pure acid. Andrews* is my authority for saying that the secret remedy of Brinkerhoff is composed of

℞ Acidi carbolici, ... ℥j (30.00 grammes);
Zinci chloridi, ... gr. viij (0.52 gramme);
Olei olivæ, ... ℥v (150.00 c.cm.).

The "Rorick System" (from Andrews) is composed of

℞ Acidi carbolici, ... ℥ij (8.00 grammes);
Glycerini, ... ℥ij (8.00 c.cm.);
Ext. ergotæ fld., ... ℥j (4.00 c.cm.);
Aquæ, ... ℥ij (8.00 c.cm.).

The following is the painless injection of S. Green (Andrews):—

℞ Acidi carbolici, ... ℥j (30.00 grammes);
Creasoti, ... gr. x (0.64 gramme);
Acidi hydrocyanici, ... gtt. j (0.06 c.cm.);
Olei olivæ, ... ℥j (30.00 c.cm.).
Mix and unite under water.

Dr. Yount, in his little book, advises the use of 3- and 5-per-cent. solutions of carbolic acid, believing the weaker solution to be more effective than the stronger. We have used carbolic

* Andrews, Rectal and Anal Surgery. Third edition, p. 149.

acid in almost every proportion and have witnessed a weak solution create more disturbance than the stronger solution used in the same way on another person. This may have been due to the general condition of the patient or to omitting some detail in the operation. Of late we have been using the following formula, with which we have been very much pleased:—

℞ Acidi carbolici, ... gr. xij (0.78 gramme);
Glycerini, ... ʒj (4.00 c.cm.);
Aquæ, ... ʒj (4.00 c.cm.).
M. Sig.: Inject.

We have used solutions of ergot, iron, and many astringents, but prefer carbolic acid used in any one of the formulas mentioned.

Case XXVII.—Internal Hemorrhoids Treated by the Injection Method.

Mr. L. M., aged 43, banker by occupation, came to me to be treated for piles. He insisted that I should treat him by the injection method, so that he would not have to take chloroform and be detained from his business. On examination, I found four very large, congested piles that sometimes protruded. I advised a more certain and radical operation, but he would not submit to it. I then fully explained to him that complications *might* arise that would cause him some pain and delay from business, and, further, that I could not promise him a permanent cure; but that, in view of these facts, if he so desired, I would do the best I could for him. He instructed me to go ahead with the treatment. The bowel was washed and he was requested to bear down; the tumors were cleansed with a carbolized solution and made ready for the injection, which was made as follows:—

An hypodermatic syringe, with an extension-piece and needle, was boiled and filled with the following solution, which has served me as well as any other:—

℞ Acidi carbolici, ... gr. xij (0.78 gramme);
Glycerini,
Aquæ, ... āā ʒj (4.00 c.cm.).

Ten drops were injected, respectively, into two of the tumors. The needle was not withdrawn until they turned whitish in color. Then they were oiled, replaced, and the patient requested to remain quiet in the recumbent position for an hour or so. For a few moments he suffered considerable pain, but at the end of two hours he returned to the

bank, wrote two letters, and went home and made himself comfortable. During the night he felt restless and uncomfortable about the rectum, but had no acute pain. I saw him on the third day at my office and he complained of nothing but heat and fullness about the anus. I deemed it best not to make an examination, for the reason that, if the piles should become protruded, his suffering would be increased and a cure delayed. He was restricted to a liquid diet and the bowel was opened every other day with a saline cathartic. On the tenth day the tumors were almost completely shriveled up. At this time the remaining two were injected in exactly the same way as the previous ones. During the night he complained of considerable pain and could not get relief, though poultices were applied constantly to the anus. At 2 A.M. and 4 A.M. he had one-fourth grain of morphia, which afforded him some relief. The pain continued on the second and third days and, in addition, all the symptoms of an inflammatory process were present. By separating the anal folds the mucous membrane appeared red and swollen and there was every evidence that an abscess was forming. His pulse was 100 and full; temperature, 103° F. He was restless and constantly complained of *pain* and *twitching* of the sphincter muscle. The poultices were continued. On the sixth day the abscess pointed a little below and to the right of the anus. It was promptly incised, curetted, irrigated, and packed with iodoform gauze. The relief was instantaneous, in so far as the pain was concerned. While he was under the anesthetic I made a thorough examination to ferret out the cause of the inflammatory process.

I found that one of the tumors had become indurated and shriveled up as the former ones had done, while the other had undergone a sloughing process; and in the centre of the tumor where the injection had been made was a deep, irregular, inflamed ulcer, at the bottom of which I found a small, round, hard lump of fecal matter. The question then arose in my mind as to whether the septic condition was induced by an unclean needle, the solution used, or as a result of a slough caused by the solution's becoming infected by the fecal matter at a later date. I am inclined to believe that the last is the most probable solution to the question. The parts were cleansed daily with a bichloride solution and the abscess-cavity packed with gauze. My patient was confined to his bed for seven days and detained from his business for ten,—a longer time than if he had submitted to the radical operation, and his suffering was much more severe. At the same time he narrowly escaped having to undergo an operation for fistula.

We record this case to show one of the many complications that sometimes follow the injection treatment of piles. In

conclusion, we will say that if everything goes on well such patients are able to attend to their usual duties while undergoing treatment with scarcely any inconvenience; and, further, that a permanent cure is sometimes effected. It is the uncertainty of this method, however, that condemns its promiscuous use in the treatment of piles.

WHITEHEAD'S OPERATION FOR PILES BY EXCISION.

Mr. Walter Whitehead, of Manchester, England, in the February number of the *British Medical Journal* of 1887, after criticising such tried operations as the clamp and cautery and the ligature, describes the operation of excision which bears his name and reports complete success in three hundred consecutive cases without a single death, secondary hemorrhage, abscess, ulceration, stricture, or incontinence. He describes the operation as follows: "By the aid of scissors and a pair of dissecting forceps the mucous membrane is divided at its junction with the skin around the entire circumference of the bowel, every irregularity of the skin being carefully followed. The external and the internal sphincters are then exposed by rapid dissection and the mucous membrane and the attached hemorrhoids, thus separated from the submucous bed upon which they rested, are pulled bodily down, any undivided points of resistance being snipped and the hemorrhoids brought below the margin of the skin." The mucous membrane above the hemorrhoids is now divided transversely in *successive stages* and the free margin of the severed membrane above is attached as soon as divided to the free margin of the skin below by a suitable number of silk sutures, which he does not remove. He prefers the lithotomy position and uses torsion to arrest hemorrhage in preference to the ligature. Mr. Whitehead claims that piles are not individual tumors, but that they are only a part of the general plexus of the veins associated with the superior hemorrhoidal, each radicle being similarly, if not equally, affected by the initial cause, either constitutional or mechanical. He believes that all

vessels should be exposed, and that the entire *pile-bearing area* should be removed. The operation has not become general either in this country or in England; in fact, few, if any, perform this operation for either an ordinary or a bad case of piles. We have performed the operation only six times up to the present date, and, from the little experience we have had with it, we feel certain that there are better and simpler operations that can be resorted to, that cause much less suffering, that are more quickly recovered from, and the cure obtained is quite as effective. We witnessed this operation performed by a certain surgeon, who, to all appearances, did it simply to make a surgical display, for there were only one or two small tumors and the ligature or the clamp and cautery would have done quite as well. In discussing this operation with one of the surgeons of the Edinburgh Infirmary who was an advocate of it, we asked him whether, if he had piles, he would have Whitehead's operation performed on himself. He replied by saying that was a different matter, and in such a way as to lead us to believe that he would never submit to it. When endeavoring to decide on the operation to perform in a given case, select the one you would have done if you were in the patient's place. The operation under consideration certainly deserves a place in rectal surgery, but not so prominent a one as Mr. Whitehead would lead us to believe. We *cannot* commend it for the treatment of ordinary or even bad cases of piles, for two reasons: first, they can be cured by a *less difficult* operation; second, complications frequently accompany and undesirable results may follow the operation. We heartily indorse the operation in long-standing cases, accompanied by frequent hemorrhages, where there are *no distinct pile-tumors*, but where the veins of the entire rectal wall are *engorged* and extensively dilated from the external sphincter upward for two or three inches (5 to 7.6 centimetres). When such a condition is present nothing short of the removal of the entire diseased area will effect a cure. The following are some of the advantages of the operation as claimed by Mr. Whitehead, viz.:—

1. That it is the most natural method, and is in perfect harmony with surgery.

2. Excision, in addition to its simplicity, requires no instrument not found in an ordinary pocket-case.

3. It is a radical cure. It removes the peculiar pile-bearing area. He believes recurrence to be impossible.

4. It is not more dangerous than other methods recommended for the removal of piles.

5. Pain is less severe than that following any other operation.

6. The loss of blood during the operation probably *exceeds* that of the ligature or clamp and cautery, but the dangers of secondary hemorrhages are unquestionably less.

We will now name some objections which have been made by different operators, and then we feel quite certain that the reader will agree with us that the operation should not be resorted to except in extreme cases, as previously mentioned:—

1. It is difficult and bloody.

2. It requires a much longer time to perform,—from thirty to fifty minutes,—while the clamp and cautery or ligature requires only five or ten.

3. Pain is severe and continues several days.

4. There is danger of ulceration and stricture from non-union.

5. There is danger of ulceration and abscess from unremoved sutures.

6. A much longer time for recovery than from other operations is required.

7. It is not suitable when other complications are present.

8. It is not suitable except in selected cases.

9. Lastly, piles can be cured quite as well by other, safer, and milder operations.

We wish to emphasize the danger of a stricture's following this operation, for we have treated four during the past year.

Following as a result of non-union and retraction of the mucous membrane there was a broad, circular, ulcerated band. Pratt, in his "Orificial Surgery," describes an operation which is none other than the "Whitehead," with slight modifications. This operation he designates "The American Operation," and would lead his followers to believe that it was of recent origin and originated by himself, when the credit belongs to Mr. Whitehead.

LIGATURE.

This operation stood the test of time for hundreds of years before the birth of the Saviour. It comes down to us recommended by such ancients as Hippocrates, Celsus, and Rhazes, the great Arabic physician of the tenth century, and many others. The great majority of authors in later years, and up to the present day, commend it as being the best operation for the cure of hemorrhoids. For instance, we find it indorsed by Sir Astley Cooper, Burke, Cripps, Van Buren, Bodenhamer, Syme, Allingham, Mathews, and others. There is no question but this operation is pre-eminently the best for ordinary cases of piles, with one exception,—namely, the clamp and cautery. The results that have followed both of these operations have proven that they are deserving of the highest praise and a detailed consideration. The reader may choose the one he can perform with the most satisfactory results, with the assurance that a radical cure will be effected.

The ligature operation, as performed by the ancients, resembles the operation of to-day in many respects. Galen recommended the excision of that portion of the pile external to the ligature. Others simply placed a ligature around the pile and let it slough, while some transfixed the centre of the pile with a double ligature and tied it on both sides. The surgeons of to-day differ as to the best method of applying the ligature. The majority, however, prefer the operation which was devised by the late Mr. Salmond and popularized by Allingham, Sr., as is done at St. Mark's Hospital, London. This operation has

been practiced in that institution for the last fifty years. Mr. Allingham describes it as follows:—

The patient, having been previously prepared by purgation, is placed on the right side of a hard couch in a good light, and is completely anesthetized. The sphincter muscle is then completely, but gently dilated. This completed, the rectum for three inches (7.6 centimetres) is within easy reach, and no contraction of the sphincter takes place; so that all is clear like a map. The hemorrhoids, one by one, are taken by the surgeon with a vulsellum, catch-tooth, Pratt's "T," or Mathews's pile-forceps or pronged-hook fork and drawn down. He then, with a pair of sharp scissors, separates the pile from its connection with the muscular and submucous tissues upon which it rests. The cut is to be made in the sulcus or white mark which is

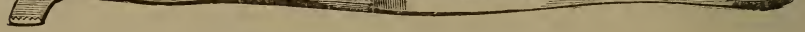

Fig. 66.—Thomas's Curved Tissue-Forceps.

seen where the skin meets the mucous membrane, and this incision is to be carried up the bowel and parallel to it to such a distance that the pile is left connected by an isthmus of vessels and mucous membrane only. There is no danger in making this incision, because all the larger vessels come from above, running parallel with the bowel, just *beneath* the mucous membrane, and thus enter the upper part of the pile. A well-waxed, strong, thin, plaited silk ligature (Turner's No. 8) is now to be placed at the bottom of the deep groove made, and the assistant then draws the pile well out. The ligature is tied high up at the neck (see Fig. 67) of the tumor as tightly as possible. Great care must be exercised in tying the ligature. The operator should be equally careful to tie the second knot so that no slipping or giving way can take place. If it is advisable, tie a third knot, for the secret of the well-being of the patient depends greatly upon this tying,—a part of the operation

by no means easy to effect (as all practical men know). If this is done, all the large vessels in the piles must be included. The arteries in the cellular tissues around and outside the lower bowel are few and *small*, and do not assist in the formation of the pile, being outside it. The silk should be so strong that the operator cannot break it by fair pulling. If the pile is very large, a small portion may now be cut off, taking good care to leave sufficient stump beyond the ligature to guard against its

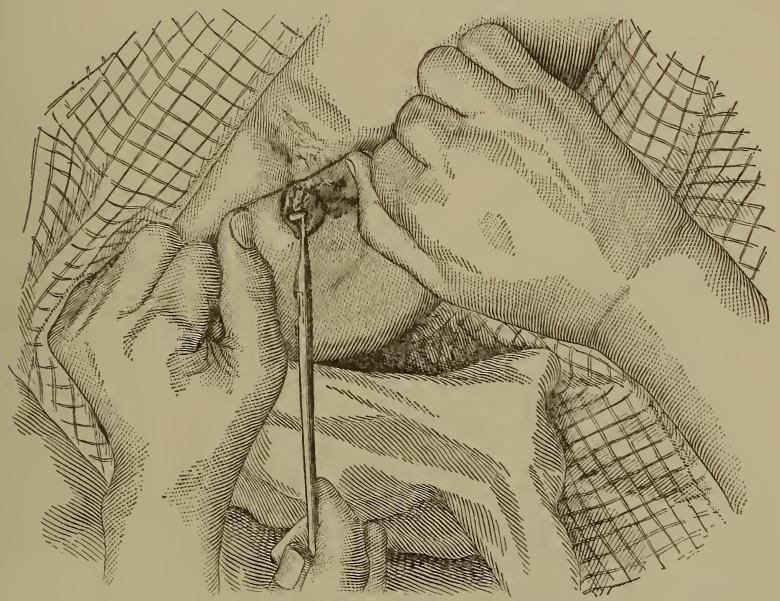

Fig. 67.—Correct Method of Applying the Ligature

slipping. When all the hemorrhoids are thus tied they should be returned within the sphincter. After this is done any superabundant skin which remains apparent may be cut off; but it should not be too freely excised, for fear of contraction when the wound heals. We always place a pad of wool over the anus, and a tight T-bandage, as it relieves pain most materially and prevents any tendency to straining.

To secure a cure by the ligature it is not essential to follow in detail the various steps as just recorded. The lithotomy

position, with the limbs well flexed on the abdomen and held in position by Clover's crutch (see Fig. 68), presents a better view of the parts after the sphincter has been divulsed. Sitting upon a high stool in front of the patient, the operator has the free use of his hands, and can apply the ligature with more ease and in a shorter time than when the patient is placed on the

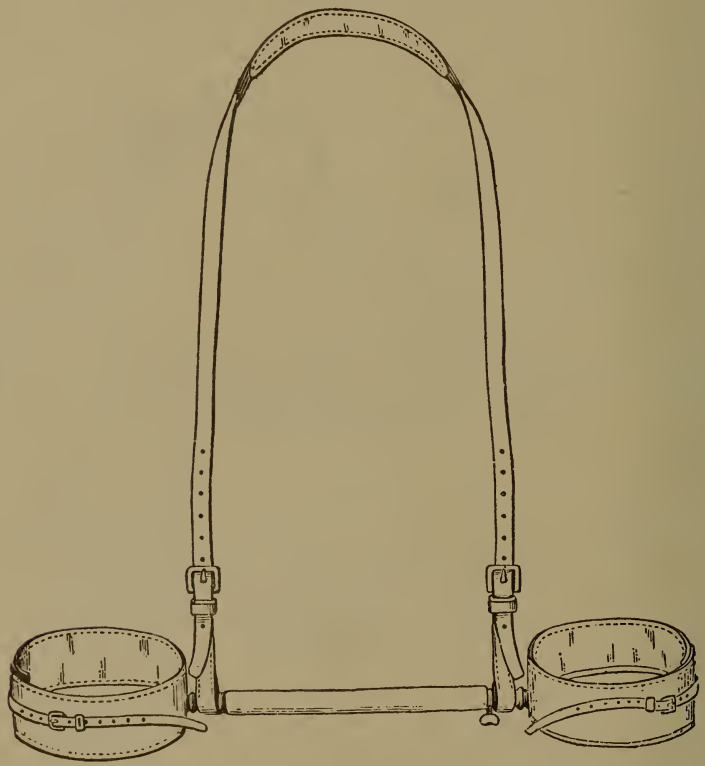

Fig. 68.—Clover's Crutch.

side. After all of the piles have been ligated and those portions external to the ligature cut off, they should be placed within the bowel. Patients suffer considerably for the first twenty-four hours. The pain during the second and third days is frequently quite annoying, though in some cases it may be very slight. The lower part of the rectum presents a sensation of heat and full-

ness. Patients are often awakened after the operation by sudden contractions of the levator ani, and the strangulated tumors seem to act as foreign bodies, keeping up the irritation. The ligatures will ordinarily slough off from the seventh to the ninth day, but now and then they have to be removed by the surgeon. We assisted in the removal of one, the patient being chloroformed for the purpose, in the Western Hospital for Rectal Diseases, in London, three years ago; in this case the pedicle was unusually large and the ligature cut only about half-way through. The pile was seized with forceps and detached with scissors. We are inclined to think that this complication occurs more frequently than the friends of the ligature would have us believe, and in such cases increased pain and delayed healing are always

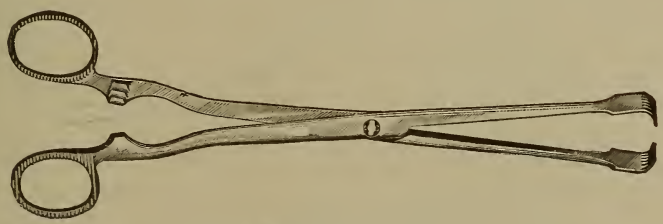

Fig. 69.—Mathews's Pile-Forceps.

noticeable. The time required to remain in-doors in such cases varies from three to six weeks. As a rule, patients operated on by the ligature are able to be about in from two to three weeks, although the ulceration may not be entirely healed. In St. Mark's Hospital the death-rate from all cases in internal hemorrhoids by ligature for more than fifty years has been about one in a thousand. This is undoubtedly a fine showing, considering that they were all hospital patients. Four died there of tetanus during March and April, in the year 1858, but none since. This would indicate an epidemic of tetanus during that time. Many other operators have met with equally good success. This fact, coupled with the permanent cure which follows this operation, has won for it a very enviable reputation. We are free to admit that this operation is a very good one, indeed,

and that the results have been as good as from any other yet devised. At the same time, we believe there is one other operation, to be described presently, that will be followed by just as good results, from which patients suffer much less, recover more quickly, and with as few bad results as follow the ligature. We refer to the clamp-and-cautery operation.

CLAMP-AND-CAUTERY OPERATION.

This operation was originated by Mr. Cusack, of Dublin; it was introduced into London by Mr. Henry Lee, and later

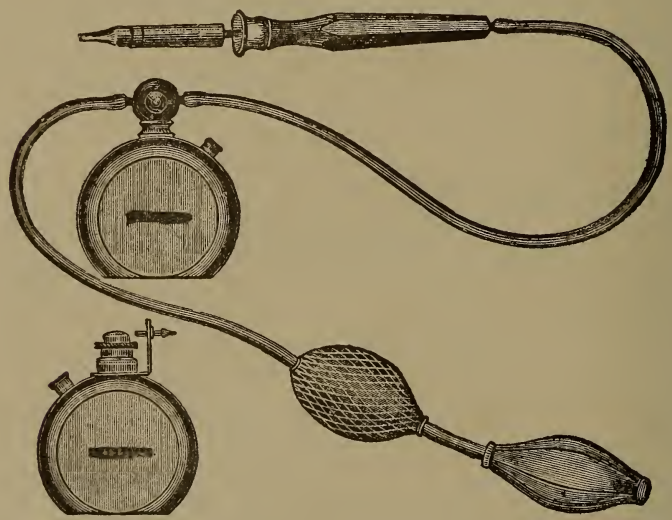

Fig. 70.—Paquelin Cautery.

brought prominently before the profession in England by Mr. Henry Smith, while delivering lectures before the Medical Society of London during the winter of 1864 and 1865. He had previously performed the operation many times. Up to the date of the origin of this operation the ligature was used universally throughout Great Britain. Through the instrumentality of Mr. Smith many were induced to use the clamp and cautery, and the majority who gave it a fair test were much pleased with the results. It is popular in Germany; but in

PLATE XV - AUTHOR'S CLAMP ADJUSTED AND SCISSORS
IN POSITION FOR EXCISION OF HEMORRHOIDS.

Burk & McFetridge Co Lith Phila

America it is a question which is the more popular, the clamp and cautery or the ligature, both having many friends of equal ability to judge. We are free to say that we give preference to the clamp-and-cautery operation. At the present time we have at our command many admirable clamps, the very popular Paquelin cautery and the cautery irons. (See Fig. 70.) By the aid of these the operation can be performed with rapidity; and, when used with care, it is not a barbarous procedure, as is often claimed, but a scientific surgical operation, whereby only the diseased tissue is removed. The pain which follows the clamp-and-cautery operation is less than that of any other operation for piles. There are four steps in the operation. 1. The

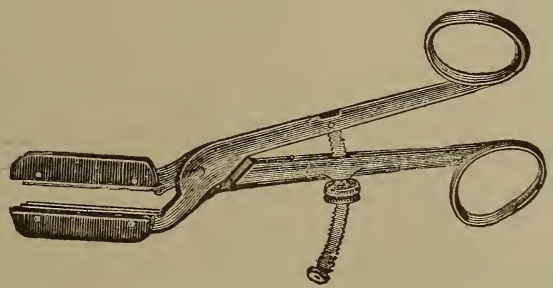

Fig. 71.—Smith's Clamp.

sphincter muscle should be thoroughly divulsed in every direction. (See Fig. 72.) This will cause the piles to come quite prominently into view. Each in turn is seized with a vulsellum or catch-tooth forceps and drawn well down. 2. The mucous membrane and skin should be severed, and, next, the pile should be dissected upward. (See Fig. 73.) 3. The clamp should be adjusted firmly to the base of the tumor, and with a pair of scissors that portion external to the clamp should be excised. (See Plate XV.) 4. Every portion of the stump should be thoroughly cauterized with the cautery-point at a dull-red heat, after which the clamp should be loosened to see if bleeding occur. (See Fig. 74.) If it does, the operator should re-adjust the clamp and cauterize all bleeding points.

After all the piles have been removed in this way the rectum should be irrigated and carbolized vaselin applied to the cauterized surfaces. A wedge-shaped compress should be placed over the anus and kept in place by a well-adjusted T-bandage. We have, of late, been in the habit of separating the mucous membrane and skin, after which the pile is dissected off the submucous tissue just as in ligature operation. The clamp is adjusted at the bottom of the sulcus thus produced. In this way there is no danger of cauterizing the skin; conse-

Fig. 72.—Dilatation of the Sphincter Ani.

quently, there will be little pain after the operation. When the piles are small or situated high up and cannot be drawn down and clamped, the narrow cautery-blade should be drawn once or twice across each pile; this will cause them to shrink up. The cautery may be applied, if used with discretion, to any dilated veins present that might at some future time form piles. As regards this operation, we think it preferable to the ligature; not because the cure is more effective, the pain so much less, or the operation less difficult to perform, but because of the facts

that the operation can be performed more quickly, with greater ease and accuracy, and the patient's recovery is from six to eight days earlier than after the ligature. At least, such has been our experience. When the ligature has been applied ordinarily it will not slough off before the eighth day; and, when it does, it leaves an ulcer with irregular edges, which not unfrequently has a tendency to become chronic. At best, patients are rarely able to be about the room before the tenth day, and frequently

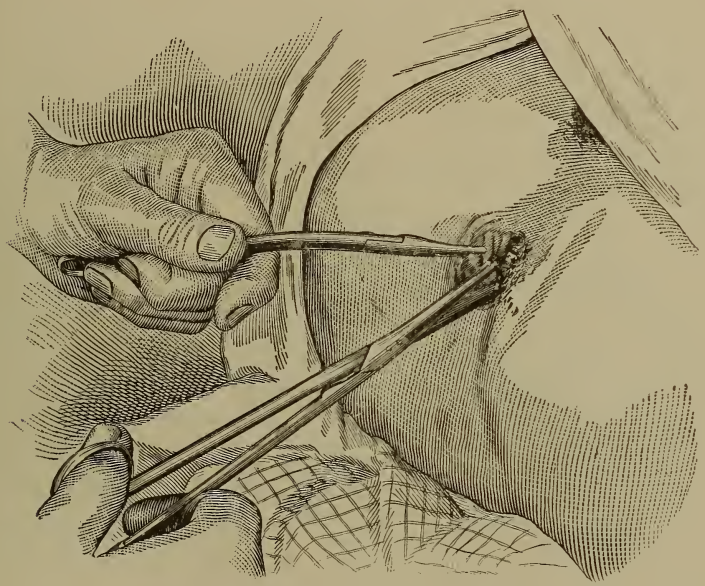

Fig. 73.—Severing the Mucous Membrane from the Skin.

not for two weeks; while after the cautery operation the ulcer will be clean and smooth the day of the operation, and will be almost healed by the time the ligature has sloughed off. Patients are allowed to sit up on the third day, and it is a rare occurrence if they be detained from business more than a week. In many cases the time that is saved is *represented by the length of time that it requires for the ligature to come away.* Granting that some healing takes place while the ligature is sloughing off, we believe that it will require as long for the remaining

portion of the ulcer to heal as after the cautery operation; for the ulcerated surface after the latter seems to heal more readily than after the former operation. The pain after the cautery operation amounts to nothing if care has been used to avoid *cauterizing the skin;* but when it has been touched, if only slightly, the pain is exceedingly annoying. Retention of urine occurs sometimes, but not so frequently as after the ligature. We have never had a case die from hemorrhage during or after

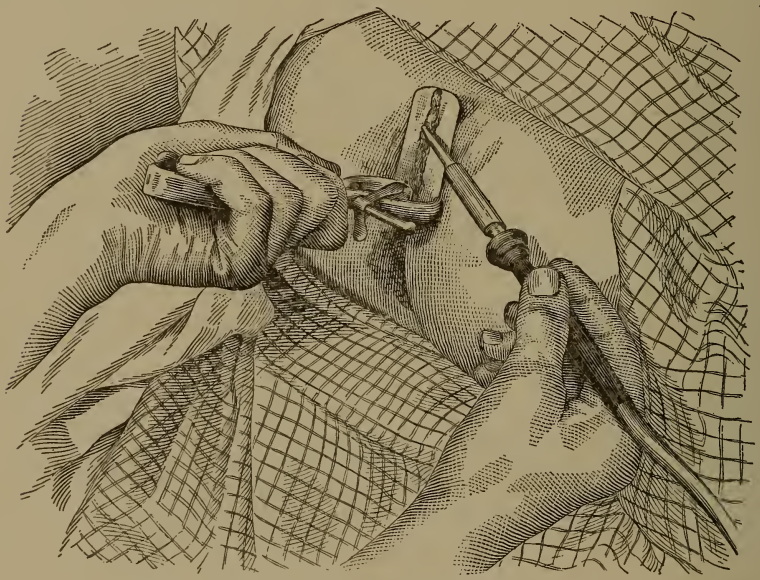

Fig. 74.—Cauterizing the Stump.

the operation. Bleeding sometimes occurs at non-cauterized points when the clamp has been removed; it is then applied again until all oozing stops, after which the patient may be placed in bed with as much safety as if each vein had been ligated. It has been our experience that hemorrhage will occur more frequently from the slipping of the ligature, when it or the stump has been severed too closely, than after the clamp-and-cautery operation. It is not probable that either tetanus or pyemia will follow the cautery operation, for there is no con-

striction of terminal nerve-filaments and the danger of sepsis has been minimized by searing the exposed surfaces. So far as a radical cure is concerned, the cautery and the ligature operations are on a level, for when either one has been performed as previously described a permanent cure will follow in every case.

The Author's Pile and Polypus Clamp.—In this connection we wish to describe a new clamp, which we have used to the exclusion of all others during the past year. It has done such admirable work that we feel justified in commending it to the profession. (See Fig. 75.) For a long time we have been dissatisfied with the pile-clamps on the market, for the reason that they do not exert equal pressure along the entire length of the blades; and, as a result of this imperfection, we came near losing two patients from hemorrhages. Other clamps, as Kelsey's, Smith's, Langenbeck's, etc., are made like a pair of scissors, having a rivet near the heel of the blade, and when the tumor is grasped that portion nearest the heel is held tightly and that near the tip loosely or not at all. (See Fig. 75, *B*, *C*, and *D*.) Consequently, when that portion of the tumor external to the clamp is cut off, all of the tissues except those nearest the heel slip through before the operator has a chance to cauterize them, thus subjecting the patient to the danger of a serious, if not a fatal, hemorrhage. Our clamp differs materially from the others (see cut, *A*.); it is so constructed that the blades are at right angles to the handle. This insures their remaining parallel and distributing equal pressure at every point, no matter how far they may be apart; so that not even the slightest portion of the tumor can slip through and escape cauterization. This practically makes a hemorrhage after the clamp-and-cautery operation an improbable, if not impossible, occurrence. The following are some of the good points claimed for this clamp:—

1. It is neat and attractive.
2. It is aseptic.
3. It is strong and does not spring nor get out of order.

4. It can be adjusted quickly and with perfect ease.

5. It does not obstruct the operator's view.

6. It has a strong spring that separates the blades and a screw with a double thread, and a tap on the nut is sufficient to run it from top to bottom.

7. When operating high up the bowel it not only does the work of a clamp, but that of a speculum as well.

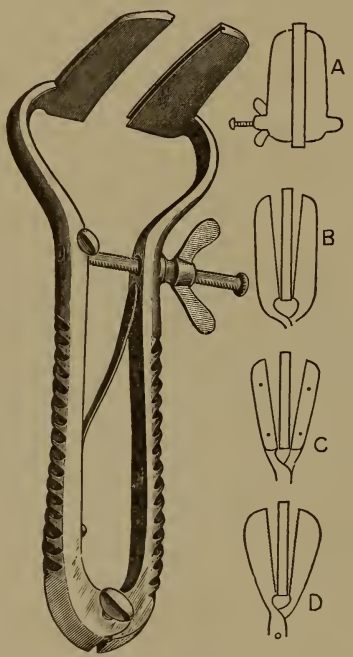

Fig. 75.—Author's Pile and Polypus Clamp.

The letters show the different clamps and their clamping power. *A*, Gant's; *B*, Kelsey's; *C*, Smith's; *D*, Langenbeck's.

8. It can be used as well with the patient in one position as in another.

9. It is as well suited for the removal of piles high up in the bowels as when they are protruded.

10. It is admirably adapted for the removal of rectal polypi.

11. It can be used for the removal of polypoid growths in the vagina.

12. It is especially adapted for the removal of a section of the bowel in cases of prolapsus recti when the cautery is indicated or sutures used.

13. It makes an admirable colotomy clamp. It causes the segment of gut to slough off in three or four days with little pain and no bleeding.

14. When it is desirable to crush piles, it can be substituted for the pile-crushers now in use.

15. It is the best clamp made, for the reason that it exerts equal pressure at all points and under all conditions.

SUBMUCOUS LIGATION.

Dr. Merrill Rickets, of Cincinnati, has devised a new operation for hemorrhoids which is performed after the following method: After thorough divulsion of the sphincters a large semicircular needle with silk ligature is introduced subcutaneously from the muco-cutaneous line to the upper border of the pile-bearing area and then returned to make its exit at the point of entrance. The needle is then removed and the ligature made taut above the venous plexus and the ends left hanging out. These ligatures may be from one-half to one inch (1.3 to 2.54 centimetres) apart, as the case may require. It is not necessary to tie all the varices in this operation, as the atrophic changes will necessarily obliterate the remaining ones. No tissue is sacrificed; the mucous membrane remains intact; there is no hemorrhage, infection, nor pain of consequence, and the loss of time is practically *nil*.

While the operation is absolutely radical and without any serious consequences, the sutures are allowed to come out of their own accord. The operation thus far, he says, has proved a success, and patients have suffered very little pain during the life of the ligature.

This operation is new and the author, like many surgeons, has not had a chance to test it in a suitable number of cases to commend it. It seems a plausible operation where the tumors

are few and small, but in bad cases where there is a great redundance of tissue we should expect to meet with failure. Again, there is no reason why an abscess and fistula might not follow as a result of the sutures' being left, as is the case so often after the Whitehead operation.

AFTER-TREATMENT.

The after-treatment of operations for piles is of much importance. After any operation for piles a well-adjusted pad to the anus, held in place by a T-bandage, supports the parts and renders the patient more comfortable, and tends to arrest any bleeding that might otherwise take place. We do not believe in the use of suppositories, although many high in authority recommend the immediate introduction of suppositories containing morphia, opium, belladonna, etc., for the relief of pain. As a rule, they will produce an uncomfortable feeling and cause the patient to strain in his endeavors to force them out. When we are compelled to use anything for the relief of pain we prefer an hypodermatic injection of one-fourth grain of morphine. Ordinarily, this will not have to be repeated. When the pad applied to the anus becomes dry and hard, the anus should be sponged off with warm water and a new pad applied. If the patient has been purged before the operation, it is not necessary to tie up the bowels with opium, for they will not move before the third day, and frequently not then of their own accord. In case they do not, a Seidlitz powder or a dose of salts, which act admirably, should be given. If there is reason to believe the feces are hard, an injection of soap-suds should be given to soften them. Patients should be urged to remain in bed until the ulcerations have almost or entirely healed. Then, when the patients begin taking active exercise, the danger of the ulceration's becoming chronic will be slight. The ulcerated surfaces should be cleansed daily, and, if there is the least tendency to become chronic, an application of calomel or silver nitrate (fifteen grains to the ounce) will stimulate the bowels to

renewed action. In case of retention of urine, hot stupes or poultices should be applied over the pelvis. This will make the patient more comfortable, and not infrequently enable him to void his urine independently of the catheter. If a catheter is used, a soft-rubber one is preferable, but *should be cleansed in boiled, filtered water before and after each introduction.* The diet after an operation should be confined to liquids and semi-solids for the first four or five days, but patients should have plenty of nourishing soups, beef-tea, soft-boiled eggs, etc. Patients do much better if they have a bright, cheerful room and congenial company. Under unpleasant surroundings they become dissatisfied and worry over their condition, although everything may be all right.

Prognosis.

After patients have recovered they frequently ask if they will ever have piles again. This is a difficult question to answer, for there are many things to take into consideration. One can say positively that those piles which have been operated upon will never return, but whether others will present themselves depends not only upon the operation selected and the thoroughness with which it is performed, but perhaps *more* upon the *causes* of the piles in the first place. When they are a symptom of some other condition,—as a disordered liver, obstructed circulation, stricture, retroverted uterus, etc.,—a relapse may occur, unless the cause is removed at the same time the piles are operated on. When persons have been discharged before the ulceration has entirely healed, bleeding may follow an action; but they can be assured of their ultimate recovery. From experience, and by observation of patients previously subjected to any of the operations heretofore advocated, we can say that the recoveries have been eminently pleasing in uncomplicated cases, and that a recurrence is quite the exception; in fact, we have never operated twice on the same patient. There is no class of operations which proves

more gratifying to the surgeon; these patients are ever grateful, not so much for the relief of the pain and bleeding as for the mental relief obtained, for it is a well-known fact that, from a surgical point of view, in such cases, the mental worry is out of all proportion to the importance of the disease.

ILLUSTRATIVE CASES.

Case XXVIII.—Internal Hemorrhoids Complicated with Prolapse. Clamp-and-Cautery Operation.

This patient, a merchant 40 years old, and a man of exemplary habits, said he had suffered for several years with piles. Recently, however, they came down to such an extent as to interfere with his business. Examination revealed the presence of a mass which proved to be the lower portion of the rectal wall. He was given an enema and requested to bear down. Immediately a number of very large hemorrhoids came into view, forming a beautiful rosette. The patient was sent to All-Saints Hospital to be prepared for the operation, which was performed on the following afternoon, as follows: The sphincters were first thoroughly divulsed; then each tumor was in turn seized with catch-forceps, pulled down, the skin and mucous membrane severed, the clamp (author's) adjusted in the incision, the tumors pulled farther down, and the clamp tightened. Then that portion external to the clamp was excised and the stump cauterized with a Paquelin cautery-point and the clamp removed. The cautery was applied to the mucous membrane and external sphincter to insure sufficient contraction to prevent a recurrence of the prolapse. The rectum was then irrigated and dusted over with iodoform, after which gauze and cotton were placed against the anus and held in position by a snug T-bandage. He recovered from the anesthetic nicely and was able to pass his urine three hours after the operation without any assistance.

Early in the night he became restless and complained of slight pain; the bandage was loosened, and in a short time he went to sleep and slept nearly all night. Once or twice he was awakened by a sudden jerking about the anus,—a symptom of common occurrence after operations for hemorrhoids. This is probably due to the levator ani. His bowels did not act until the fourth day, after a dose of Epsom salts had been administered. After each stool the rectum was irrigated and the gauze applied after the raw surfaces had been painted over with balsam of Peru. His diet consisted of liquid and semisolid foods. At the end of the first week the patient was able to walk about with comfort;

he was discharged from the hospital and returned to his home. He was instructed to cleanse the rectum daily, use the balsam, and write me in a week. He obeyed instructions, and said he had resumed his duties and that he should not know that he had been operated on except for a slight tenderness about the anus.

Case XXIX.—Internal Hemorrhoids Complicated with Ulceration. Ligature Operation.

Mrs. S., the wife of a prominent wholesale merchant, was referred to me to be treated for a rectal disease. She informed me that she had been rendered almost helpless from daily hemorrhage from the rectum that followed each action; and, in addition to this, she had considerable pain of late, which she thought was due to two tumors that remained constantly outside the anus. Until the beginning of her present illness, one year ago, she had enjoyed perfect health and weighed 140 pounds, while now she weighs only 108.

Examination revealed two large internal hemorrhoids, just without the anus, that were ulcerated and exceedingly sensitive. The sphincter remained passive, probably being tired out, as it were, from the constant contraction and irritation. An enema was administered, and she was requested to strain down. Immediately the tumors became distended and commenced to bleed, and the blood could be seen spurting from the centre of the ulcerated spots in two of the tumors.

Operation.—I advised her to have them operated on without delay, and, further, that I preferred the clamp-and-cautery operation. The idea that the cautery was to be applied frightened her; she asked me to do the ligature operation, for a friend of hers had been operated on in this manner with success. I consented, and each tumor was, in turn, seized, pulled down, the skin severed near the muco-cutaneous junction, and the piles dissected up from the submucous tissues and ligated high up. A small amount of cotton smeared over with vaselin was then passed into the rectum and the patient put to bed.

In one hour she was conscious and was suffering very little pain. At 8 P.M., six hours after the operation, she became very restless; she said the rectum felt hot, swollen, and pained her very much. Cold cloths were applied to the anus, but gave no relief; so I ordered one-fourth grain of morphine hypodermatically, which gave some relief, but had to be repeated in two hours, after which she had a fairly comfortable night. She was unable to void her urine, though hot stupes had been applied, and it was removed by catheter. Next morning she was fairly comfortable, but the urine had to be drawn for four days afterward. From the fourth day she complained of nothing but a fullness about the

rectum and a feeling as if something were there that should come away, —a symptom that I have frequently observed after this operation. The ligatures came away, respectively, on the seventh and the ninth days, leaving grayish-looking ulcers with irregular edges. These were treated with one or two applications of calomel, to clear them of any remaining portion of the slough. Afterward they were treated like any other ulceration,—namely, by cleanliness, stimulating applications, and rest. She was up and about at the end of the second week, and at the end of the third she was discharged from the hospital cured.

CHAPTER XX.

HEMORRHAGE FROM THE RECTUM.

Hemorrhage from the rectum constitutes one of the most frequent and alarming symptoms of rectal diseases, often being the first indication that anything is wrong about the rectum. Blood may be voided pure or mixed with pus, mucus, feces, or other *débris*. The discharge of blood occurs during stool, and may continue for a greater or less length of time afterward. Bleeding is not a sure indication that piles are present. It may be a symptom of

1. Ulceration.
2. Fissure.
3. Stricture.
4. Polypi.
5. Malignant disease.
6. Injuries to the rectum.

It may be very slight or profuse. Sometimes patients bleed almost to death from some trivial lesion, unless the bleeding is promptly arrested. The means resorted to for arresting hemorrhage after an operation about the rectum are almost identical with those adopted for stopping the bleeding from other causes and in other parts of the body; consequently, hemorrhages of the rectum, from whatever cause, will be considered under the following general heading:—

Post-operative Hemorrhages.

Hemorrhages after operations on the rectum, like those occurring in other parts of the body, may be either

1. Primary. 2. Recurrent. 3. Secondary.

In all operations where cutting is necessary, bleeding may be expected, though ordinarily it will not be profuse, except in cases of excision of the rectum, operations for stricture, and extensive fistulas.

Primary.—This variety occurs during the operation, and

can be arrested by a ligature if a large vessel is involved, and by torsion, styptics, or cauterization if medium in size. When it seems to be general, or the result of oozing from a number of distinct points, it can be arrested by a sponge or piece of gauze, saturated with ice-cold or hot water, firmly pressed against the bleeding parts.

Recurrent.—A more serious form of hemorrhage occurs where some vessel was injured during the operation and did not bleed at the time, was overlooked, or from the slipping of a ligature. This variety is known as recurrent hemorrhage and takes place within a few hours after the operation.

Secondary.—Secondary hemorrhage occurs several days after the operation,—usually from the fifth to the eighth day,—as a result of some vessel's not becoming obliterated as the ligature sloughs off, or from sloughing or ulceration from other causes. Secondary hemorrhage occurs more frequently in debilitated and anemic patients than in those who are robust. As a rule, the bleeding comes on suddenly and is very profuse, and unless arrested immediately it may prove fatal. After rectal operations the nurse should be instructed to look out for the general symptoms of hemorrhage, for the bleeding may be internal and *fatal*, while not the slightest amount of blood escapes from the anus. Before mentioning the different ways of arresting bleeding, we desire to mention the fact that both patient and nurse may become unnecessarily alarmed at times, because the cotton and pad over the anus may become saturated with a red fluid. This is likely to occur in any case where all of the irrigating fluid is not removed from the rectum at the close of the operation. Close examination, however, reveals it to be a thin, watery fluid, and not pure blood. If, on the other hand, you find that there is an active hemorrhage, first thoroughly prepare yourself with the things with which to stop it, then go at it in a business-like manner, for it is exceedingly *dangerous to tamper with hemorrhage* by doing some *little* thing and trusting to luck that it has stopped and will not occur

again. We were once called to a man who had been bleeding from the rectum at intervals for several days. Rest in bed, the application of nitric acid, and styptics had been tried thoroughly and failed to arrest the bleeding. When we arrived the patient was livid, pulseless, and unconscious. They told us his bowels had just acted; the motion was examined and it contained nothing but clotted blood. The physician present thought we were too late. We at once introduced a large speculum and found a large rectal ulcer, one inch (2.54 centimetres) in circumference, in the centre of which could be seen the bleeding-point, which was immediately cauterized with a Paquelin cautery-point and the ulcer treated with silver. Hot baths and stimulants soon revived the patient, who improved from that time on.

Methods of Arresting Hemorrhage.

The methods of arresting hemorrhage are many. Those found to be most reliable are:—

1. Ligation.
2. Cauterization.
3. Torsion.
4. Compression.
5. Styptics.
6. Application of hot or cold water.

When internal bleeding is suspected, the patient should be requested to empty his rectum. If bleeding has been going on, clots of blood will be discharged with the feces. When there is reason to believe the bleeding is due to a small vessel or to oozing, it can frequently be arrested by simply *tightening* the bandage. If this fail, the rectum should be irrigated for several minutes with cold or quite hot water, or with some one of the various astringent solutions, as alum-water, the infusion of black-oak bark, etc. Astringent powders dusted over the bleeding parts, tannic acid, gallic acid, zinc, Monsell's powder and other powders known to have a contracting effect on the tissues have all been recommended. Monsell's powder has been used more frequently than the others, but it has proved very undesirable in our hands, not because it did not arrest the bleeding, but on account of the filthy condition in which it

leaves the wound. In our experience water, *hot* or *cold*, in conjunction with compression, has been satisfactory in every respect. When the hemorrhage is profuse, time should not be wasted on injections and powders. The rectum should be exposed by means of a speculum and the bleeding vessel searched for until it is found and ligated or seared over with the Paquelin cautery. If the operator be not so fortunate as to have one of these convenient and valuable instruments, a poker or a curling-iron may be heated to a red heat and used as a substitute. In case the vessel is situated so high that a ligature cannot be applied, it should be seized with a pair of artery-forceps and thoroughly twisted, and the forceps left on if necessary; for in cases of profuse hemorrhage of the rectum the patient's life not infrequently hangs upon the thoroughness of the work. In case the bleeding-point cannot be located, we must then resort to packing the rectum, which must be well done; for there is nothing more deceptive than to shove a lot of gauze or other packing loosely into the rectum with the idea that it will hit the right spot and arrest the bleeding. The pressure must be made firmly and equally on every side. Mr. Allingham packs the rectum after the following manner: He takes a cone-shaped sponge and places a strong ligature through it near the apex. It is then brought back again, so that the apex is held in a loop; the sponge is dampened and dusted over with some astringent—preferably iron—and squeezed dry; after which, guided by the index finger, it is introduced into the rectum, apex first, and carried up five inches (12.7 centimetres), leaving the ends of the ligature outside the anus. The rectum below the sponge is packed with cotton, dusted over with astringent powder. When this is completed he seizes the ligature and pulls the sponge downward with one hand and pushes the cotton up with the other. In this way the sponge is made to spread out and the cotton compressed tightly at the same time. And, if this be done carefully, he asserts that it is impossible for bleeding to occur either internally or externally. We have

resorted to this procedure in one case only, and it proved quite effective. Another admirable method of arresting the bleeding is the India-rubber tampon of Mr. Benton, of England, improved by Mr. Edwards as shown in the latter's work. (See Fig. 76.)

The majority of operations on the rectum are performed

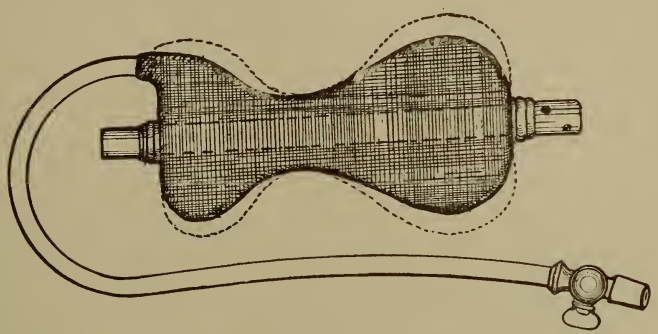

Fig. 76.—Benton's India-Rubber Tampon. (Modified by Edwards.)

on the lower inch and a half (3.8 centimetres) of it. When bleeding occurs in this locality it can be speedily arrested by inserting into the rectum a firm piece of rubber tubing, three inches (7.6 centimetres) long and three-fourths of an inch (1.9 centimetres) in diameter, around which has been wrapped several layers of gauze. It can be kept in place by placing a safety-pin through the outer end and into a **T**-bandage. It

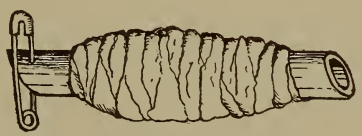

Fig. 77.—Drainage-Tube Wrapped with Gauze.

makes a desirable compress and at the same time allows the escape of wind and discharges, and warns us in case the bleeding has not been arrested. (See Fig. 77.) Hollow vulcanite tubes (see Fig. 78), kept at most any instrument-dealer's store, act in the same way. The main factor in arresting hemorrhage after any operation about the rectum, where the cautery or

ligature cannot be used, is to make firm and constant pressure over the bleeding-points.

We once more call attention to the fact that when it becomes necessary to pack the rectum it should be done

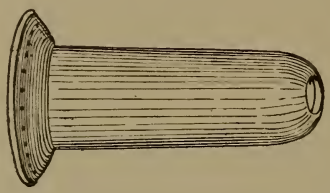

Fig. 78.—Hollow Vulcanite Drainage-Tube.

thoroughly, so that not a single point of the rectum will be exempt from the pressure; when this has been accomplished, we can retire with the assurance that our patient is perfectly safe and that all bleeding has been arrested.

CHAPTER XXI.

PRURITUS ANI (ITCHING PILES).

Itching of the anus seems to us to be the most intractable of any of the diseases of the rectum and anus which we have been called upon to treat. It is very distressing and disheartening when present in an aggravated form. Patients frequently remark that the itching is much more difficult to endure than acute pain, and that their lives are rendered almost unbearable by it. The term *pruritus ani* has been applied to all cutaneous affections of an itching character occurring about the anus. In many cases there will be no visible pathological change, and no cause can be found to account for the itching; the pruritus, however, is usually a symptom of some other disease. It occurs more frequently in the male than in the female, and at middle life. It is usually more or less constant, but becomes more intense after the patient becomes warm in bed at night. The itching is not always limited to the margin of the *anus*, but may be found radiating from it in all directions, extending up the scrotum, down the limbs, and over the coccyx and the sacrum in very bad cases, while numerous cracks and fissures are to be seen as results of the scratching. Rubbing the part to relieve the itching gives only temporary relief, yet few are able to withstand the temptation, though they know from experience that by so doing they only make their suffering the more difficult to bear on the morrow. The friction excoriates the skin, and in cases of long standing the latter becomes dry and glistens like parchment. After a time the pigment is destroyed and the skin is white.

Etiology.

In some cases the cause can be readily ascertained, and, if removed, a cure rapidly follows; in others no cause can be found to explain its presence. This has led to much discussion.

Some claim that the pruritus is due to a local and others that it is due to a constitutional disturbance; while others believe it to be a result of habit or some neurotic condition. In a given number of cases, no doubt, all of the named factors play an important part. We have, in many instances, seen the itching disappear when we had destroyed thread-worms which were found in the anal folds. We have seen it produced as a result of impacted feces, hemorrhoids, ulceration, prolapsus, fistula, and fissures; in fact, anything which encourages a discharge from the rectum may induce it. Pediculi and other parasites are not infrequent causes; and the same might be said of erythema, herpes, or of any variety of eczema, either acute or chronic. Errors in diet—especially the overindulgence in alcoholic stimulants or highly-seasoned foods—and irregular habits will likewise produce this condition or aggravate it when it already exists.

Symptoms.

The most prominent symptom is the *unbearable itching*, which is made more intense by warmth and contact of the surfaces of the buttocks. We have seen many cases where patients were unable to obtain rest for several nights at a time; and in some cases, where they dropped off to sleep, they would scratch themselves while unconscious, thus excoriating the anal margin, which renders suffering the more intense on the following day. We have had a number of patients tell us that, if we did not relieve them, they would commit suicide. Only the other day a physician made that assertion, for life, in his condition, was simply unbearable. From what has been said, we trust that we have made the gravity of this condition apparent, though it is so frequently made light of.

Treatment.

The treatment consists first in the *removal of the cause* when it can be determined; but when there is no ascertainable local cause and the patient is debilitated or of a strumous dia-

thesis, much benefit may be derived from Fowler's solution of arsenic in full doses, codliver-oil, iron, quinine, or from any of the numerous remedies employed to build up the system in general. If there is reason to believe it due to excesses in eating and drinking, the latter should be prohibited and a light diet ordered. When it is due to thread-worms, injections of salt- or lime- water will ordinarily destroy them; in very obstinate cases, however, santonine and other anthelmintics will have to be used. When due to eczema and the skin is dry and scaly, we observe the most benefit from the use of tar preparations, the best of which is the soap-liniment. Often much relief is afforded by bathing the parts with a solution of alcohol or tar-water. When due to eczema of the moist variety, soothing applications are preferable, and a good one is boric acid dusted over the moist surface. The two raw surfaces should then be separated by gauze or other soft dressing to prevent irritation of the parts and a spread of the disease. In eczema marginatum, dilute sulphurous acid, applied after the parts have been cleansed by warm soap-suds, will prove very effective as a cure, and will give almost immediate relief. In many cases, unattended by any observable local pathological changes, the itching is frequently so annoying that palliative remedies are urgently demanded; these are best prescribed either in the form of ointment or lotion, and are composed of one or more of the following astringent medicines: Acetate of lead, opium, zinc preparations, chloroform, mercury, carbolic acid, salicylic acid, biborate of soda, etc. We have derived immediate relief from brushing the diseased parts with a solution of silver nitrate (twenty grains to the ounce) or Churchill's tincture of iodine twice or thrice weekly, both of which cause some immediate pain, but the relief afforded twenty-four hours later will be sufficient to repay patients for all the pain they have suffered from the application. In St. Mark's Hospital, London, as a rule, they use the following formula, which is to be made fresh and applied daily with a camel's hair brush or with cotton:—

℞ Liq. plumbi subacetat. (fort.), . . . ʒj (4 c.cm.) ;
Lactis, ... ʒvij (28 c.cm.) ;
Misce.

In cases of eczema, Dr. Bulkley, of New York, recommends the following, after cleansing the parts thoroughly with Castile soap :—

℞ Liq. carbonis detergens (Wright's), . . ʒj (30 c.cm.) ;
Glycerini, ... ʒj (30 c.cm.) ;
Zinci oxidi, ... ʒss (15 grammes) ;
Pulvis calaminæ prep., ... ʒss (2 c.cm.) ;
Aquæ, ... ʒvj (180 c.cm.).
M. Sig. : Apply with brush and allow it to dry daily.

This is his favorite prescription.

All of the various tar-ointments will be found serviceable. One of the best is composed of

℞ Ungt. picis, ... ʒiij (12 grammes) ;
Ungt. belladonnæ, ... ʒij (8 grammes) ;
Tinct. aconiti, ... ʒss (2 c.cm) ;
Ungt. aquæ rosæ, ... ʒiij (12 grammes).

Space forbids my giving the hundred and one prescriptions which have been recommended to cure this annoying condition. In many cases it will be found necessary to change from one remedy to another until one is found which suits the case in hand. This should lead us to be very careful in our prognosis, and not commit ourselves as to any specified time that it will require to effect a cure in any given case.

In nervous cases troubled with insomnia it will be necessary to give something that will enable the patient to sleep. We much prefer chloral or the bromides to an *opiate*, for the latter makes the itching all the more intense on the following day, though it does enable patients to get some immediate rest. Allingham, of London, has invented a very ingenious little instrument to relieve the itching during the night. It consists of a bone or ivory plug, shaped like the nipple of an infant's feeding-bottle. When it is inserted into the anus, it is retained. It is about two inches (5 centimetres) in length and as thick as

the end of the index finger. He claims that it prevents nocturnal itching, by exercising pressure upon the venous plexuses and terminal nerve-filaments close to the anus. It gives us great pleasure to recommend this little device, for we have tried it a number of times and have always found that it relieved or palliated the itching.

Surgical Treatment.—The surgical treatment consists, first, in the removal or the cure of any local disease present that would be likely to intensify the itching, such as ulcers, hemorrhoids, fissures, polypi, eczema, etc. Thorough divulsion of the sphincter and a few applications of silver to any fissures and ulcers that might be present will nearly always cure them and thereby relieve the itching. Simple divulsion of the sphincters, *where no local cause could be detected*, has given relief in not a few cases; we are unable to state why at present. In one or two cases in which the skin was lacerated for a considerable distance about the anus, and where it failed to get well after the sphincter had been divulsed and the usual remedies tried, an anesthetic was administered and the diseased parts were thoroughly curetted and then cauterized with a Paquelin cautery-point. The raw surface left was treated like an ordinary burn, and it healed kindly in a short time and the itching ceased altogether, proving that the cause of the pruritus was, without doubt, within the skin and of germicidal origin. Many of these sufferers will wander from one physician to another until they are in a most pitiable condition and almost beyond human aid. This is largely their own fault, for many become discouraged and seek a change ere the physician in charge has had a chance to do the patient and himself justice. Even in the most deplorable cases, with due care, the aid of surgery, lotions and ointments judiciously applied, their lives may be rendered bearable and a cure effected, provided they surrender themselves entirely to our care. In conclusion, we wish to say that, as a rule, the more *radical* the treatment, the quicker the patient will get well.

ILLUSTRATIVE CASE.

Case XXX.—Pruritus Ani (Aggravated Case).

The case in point was that of a Frenchman of exceedingly nervous temperament and an inveterate smoker. The itching commenced fifteen years ago, but of late had become so intense that he was unable to sleep at night, and he suffered much during the day from itching and pain where the skin had been lacerated. Like all who suffer from this complaint, he had tried numerous prescriptions and pile-ointments recommended to cure it, without any benefit whatever. He said that, if he did not get relief soon, he would commit suicide, for life was simply unbearable. On examination I found the skin in and around the anus thick and parchment-like; here and there large fissures and cracks, which were produced by the constant scratching. Internal examination revealed the presence of a large, unhealthy ulcer with raised edges, and, from all indications, it had been there for months, if not years. I ascribed the outer condition to the foul discharge from the ulcer, and determined to cure the same before trying to relieve the itching. Accordingly, the ulcer was curetted and incised in two places through several layers of the sphincter, to insure rest. It was then brushed over with pure nitric acid, and he was placed in bed. He progressed nicely, and on the third day the rectum was washed out with carbolized water and a solution of silver nitrate, twenty grains to the ounce, was applied to the ulcer. In addition to this, I applied Churchill's tincture of iodine over the itching area after brushing it over with a 6-per-cent. solution of cocaine. From this time on the rectum was cleansed daily, and silver was applied both to the ulcer and to the itching area twice a week for three weeks, when the ulcer completely healed. The applications were continued to the outer part one week longer; he was then discharged, the itching being entirely relieved. I instructed him to keep his bowels in good condition and to bathe the parts every night in cold water.

CHAPTER XXII.

DIARRHEA AND DISCHARGES.

In the chapter on the symptomatology of rectal disease we mentioned diarrhea and discharges as being symptoms of certain diseases. It is our purpose, in this chapter, to consider diarrhea and discharges in detail, that a better understanding may be had of them and their diagnostic importance in so far as they relate to the study of rectal diseases. During the past few years we have had many patients come to us suffering from some serious rectal disease. They had been treated for weeks and months by internal medication for chronic diarrhea, when the frequent stools were excited by a local disease situated in the terminal portion of the colon. That in these cases the diarrhea was due to local irritation alone was proven by the fact that all internal medication was discarded when the seat of the disease had been located and a local treatment substituted. Invariably when the local disease was cured there would be a cessation of the diarrhea. A few weeks ago a lady came to us for treatment and gave the following history: She had been treated for more than three years for chronic diarrhea, supposed to be the result of some derangement of the liver; she had from fifteen to twenty liquid stools in twenty-four hours; the stools were now and then mixed with pus and mucus. The actions were preceded and followed by more or less pain, straining, and spasmodic contraction of the anal sphincters. On inquiry she informed us that her rectum had never been examined and she did not think it necessary to have it examined, for diarrhea was the only thing that troubled her. We insisted upon the necessity of an examination; she finally consented, and we found a large ulcer one inch (2.54 centimetres) above the anus, on the posterior wall of the rectum; this ulcer was evidently the source of irritation. The sphincters were immediately divulsed, the

ulcer curetted, and a strong solution of silver nitrate applied to its base. For two weeks thereafter stimulating applications were made to it. By this time all the diarrheal symptoms had disappeared and she was discharged from the hospital cured. We have treated a few cases wherein the diarrhea preceded and *caused* the local rectal irritation as a result of the frequent irritating discharges produced by some disease situated *higher* up in the colon. In such a case as the one mentioned, if the original irritation is removed or corrected and the rectal disease remains uncared for, it becomes an independent source of irritation, excites peristalsis and frequent stools, thus producing the same condition that formerly gave it birth. Any one of the following diseases, when located either in the rectum or sigmoid, will be accompanied by symptoms that might be mistaken for a simple "chronic diarrhea." For this reason we will deal with them separately, that we may more fully point out their diagnostic significance:—

1. Chronic catarrh.
2. Stricture.
3. Ulceration.
4. Malignant disease.
5. Prolapsus.
6. Polypi.
7. Fecal impaction.
8. Villous tumors.

Chronic Catarrh.—Inflammation of the rectum and of the sigmoid is frequently mistaken for diarrhea, and they occur often, because: 1. In the first place, all irritating foods that have been hurried through other portions of the digestive tract are longer delayed in the lower portion of the colon. 2. The feces become firm and nodular and are jostled from side to side, during peristalsis, against the sensitive mucous membrane. 3. The feces undergo certain putrefactive changes while still in the colon, thus exposing any unsound portion of the mucous membrane to the septic organisms contained therein.

Stricture.—A stricture, from any cause, that is sufficiently marked to produce a mechanical obstruction may cause diarrheal symptoms for two reasons. First, when a stricture is of long standing there will invariably be more or less ulceration at

or above the constriction. This exposes the terminal nerve-filaments to any irritating substances. As a result undue peristalsis is excited, causing frequent stools. In the second place, the liquid feces are readily discharged through the constriction, while firm and well-formed feces are unable to pass and accumulate just above it, become hard, irregular in shape, and smeared over with a glairy mucus. At frequent intervals this mass presses down upon the stricture, producing a sensation similar to that felt before stool; the sufferer goes to the closet and endeavors, by continued straining, to empty the bowel, but is unable to do so. The mass then acts as a valve; it rises and falls, each time exciting renewed peristalsis, which extends upward along the entire intestinal canal, causing the immediate discharge around the mass of any fluids contained therein. As a result of this abnormal condition, these sufferers spend most of their time in the closet straining, and the bowel is being constantly squeezed dry of everything excepting the impacted mass One of these patients once remarked to us that everything she ate seemed to be converted immediately into liquid and passed right through her.

Ulceration.—In point of frequency as a cause of diarrhea ulceration comes next to catarrh. All who do very much rectal work must have observed the frequency of diarrhea as a symptom of ulceration of the rectum and the sigmoid. Whenever the ulcer becomes irritable and very sensitive, any little particle of fecal matter lodged within it or the passage of any irritating discharge will prove sufficient to excite frequent and prolonged peristalsis, resulting in much straining and frequent stools. This we have seen demonstrated many times.

Malignant Disease.—Diarrhea constitutes the most troublesome symptom with which we have to deal in the treatment of malignant disease of the lower portion of the colon. The straining and the pains which sufferers from this disease have to endure are pitiable to behold, especially in the later stages of the disease. It has been only a few weeks since a lady was

brought to us for treatment. She was suffering from a cancerous stricture of the rectum with the above symptoms. She had been treated for diarrhea for more than eight months, and a rectal disease had never been suspected.

Prolapsus (*including Invagination*).—Cases of prolapsus and invagination of the rectum and the sigmoid have been mistaken and treated for chronic diarrhea, on account of the frequent discharges of large quantities of mucus. Mucous discharges are always present when either of these conditions is found.

Polypi.—Polypi, when located either in the rectum or in the sigmoid, act as a source of irritation and excite an abnormal secretion of mucus, which is discharged at frequent intervals and may be mistaken for chronic diarrhea from other causes.

Impaction of feces.—It is a well-known fact that diarrhea is sometimes a symptom of fecal impaction. Well-formed feces cannot pass the impacted mass, which, acting as an irritant, excites peristalsis and causes only the liquid portions of the feces to be discharged, at frequent intervals, around the impacted mass.

Villous Tumors.—The leading symptom of a villous tumor is frequent discharge of large quantities of mucus which resembles very much the white of an egg.

Pathological Anatomy.

The pathological anatomy in cases of chronic diarrhea varies in appearance very much, depending upon the disease which produces it as well as the length of time it has existed. When diarrheal symptoms are the result of *prolapsus*, *polypi*, *villous tumors*, *colitis*, *proctitis*, or *impaction*, the mucous membrane will appear congested and will be smeared over with a thick, glairy mucus, pus, or both. If these are not corrected the membrane soon loses its smooth, velvety appearance; becomes much thickened, indurated, and firmly attached to the submucous tissues, sometimes forming a long, *tubular* stricture.

When due to *ulceration*, *stricture*, and *malignant* disease, the mucous membrane, in the earlier stages of the disease, presents an appearance very much like that referred to above; but when the ulceration begins to extend, it soon loses that smooth feel and appears ragged and irregular to the touch. When a stricture has formed, no matter whether it be malignant or not, ulceration will almost invariably be present at the point of constriction as well as above and below it. In many cases there will be a periproctitis, which may terminate in an abscess and fistula. The entire rectal wall will be very thick, hard, and firmly attached to the neighboring tissues and organs. The finger, introduced into the bowel, will come in contact with many irregularly shaped nodules, cavities, or cicatricial bands; and when passed within the constriction, a sensation is felt similar to that produced by a strong rubber band placed around the end of the finger.

Symptomatology.

Pain, tenesmus, and frequent stools are undoubtedly the most annoying of the many and varied symptoms of which these sufferers complain. In one case they will be mild, in another severe, depending both upon the disease and the extent to which it has progressed. When the symptoms are due to *polypi*, *villous tumors*, *prolapsus*, *impaction of feces*, *chronic colitis*, or *proctitis*, the symptoms will be very much alike,—that is to say, in all probability there will be from six to ten stools daily, accompanied by a smarting, burning pain, tenesmus, and eversion of the mucous membrane, which will be congested. When a prolapsus, a polypus, or a villous tumor is present, in addition to the above symptoms, the patient will complain of something protruding from the anus.

Character of the Stools.—They are always liquid or semi-solid. The majority of them will be made up entirely of mucus, which will be mixed now and then with pus and blood when ulceration has commenced. The remainder of the stools will

consist of liquid and semisolid feces. Sometimes patients complain of *pain* and *tenesmus* over some portion of the intestines or colon, to be followed on the morrow by frequent discharges of *mucus* and shreds and sometimes almost *perfect casts of the bowels*, which at first appear to be the mucous membrane itself, but when pulled apart prove to be thick *exudations* that have formed on the membrane, resembling the false membrane seen in diphtheria. The cause of this variety of inflammation is very obscure at the present time. It is thought to be of nervous origin and we have been in the habit of diagnosing such cases as *membranous enteritis.* When the mucous membrane is irritated from any of the diseases mentioned, the sphincters ani will alternately contract and relax, causing the patient much annoyance; and, when the exciting cause remains for any great length of time, the sphincters become tired out and remain passive, necessitating the wearing of a napkin constantly to prevent the escape of the feces.

In the earlier stages of *ulceration*, *stricture*, and *malignant disease*, one or all of the symptoms just described may be present; they become aggravated as the disease progresses. In addition to them, there will be a variety of reflex disturbances of the neighboring organs that are liable to be mistaken for ovarian neuralgia, diseases of the uterus, prostate, or other pelvic diseases. There will be pains in the back, abdomen, and down the limbs; but the most annoying symptom of them all is the almost constant straining and never ceasing desire to empty the bowel, which many times is a physical impossibility. When a stricture is present, no matter whether it be malignant or not, the liquid feces are discharged through it at short intervals, while the solid portion accumulates above it and acts as a foreign body, producing the sensation felt just before stool. As a result these sufferers spend much of their time in the closet, straining and trying to empty the bowel,—a thing impossible to do on account of the mechanical obstruction. They are forced to leave the closet with the feeling that some-

thing that ought to pass away still remains in the bowel. In all such cases the sphincters become passive and the annoyance of incontinence is added to the suffering. It is hardly necessary to call attention to the fact that these patients look worn out, have a sallow complexion, hollow eyes, are extremely nervous, and that many of them are in the habit of taking morphine, opium, chloral, or the bromides that they may get relief from pain and tenesmus.

Diagnosis.

It is easy to make a correct diagnosis of any of the diseases under discussion if one first get a history of the case and then make a thorough digital and visual examination of the rectum and as much of the colon as possible. Whenever there is any doubt as to the real conditions present, the patient should be placed on the table in a good light, and the examination completed under chloroform. In *chronic catarrh* the mucous membrane will be congested, thickened, immovable, and smeared over with an abundance of thick, glairy, ropy mucus. A sweep of the finger around the rectal wall will readily detect the presence of *polypi*, for they are always attached by a long, narrow pedicle. A *prolapsus* will be recognized by the everted mucous membrane, the globular form of the tumor, the slit in its centre, and the fact that not only one side, but the entire circumference of the bowel is involved. When *ulceration* is present the mucous membrane will feel irregular and ragged to the touch. When a speculum is used, the ulcers, when located within four or five inches (10 or 12.7 centimetres) of the anus, come into plain view. *Malignant disease* and *stricture* can be recognized by the diminution in the calibre of the bowel, as a result of cicatricial bands, or from hard nodular tumors, with ulceration at and above the point of constriction. When extensive ulceration is present the stools will vary in frequency, from four to fifteen a day, and will be almost entirely liquid, for the reason that the food is not retained long enough within the intestinal tract to

become firm. There will be frequent discharges of mucus mixed with pus and tinged with blood. Now and then, when the ulceration has encroached upon a blood-vessel, the entire motion will be made up of clotted blood. In *malignant disease* and *stricture* the discharges resemble those of extensive ulceration, but added to them are small detachments of broken-down tissue. In the later stages there will be more or less blood in every stool; the blood becomes mixed with mucus and pus, giving the discharge an appearance not unlike *cold coffee-grounds*. The discharges become more frequent as the tissues break down.

Prognosis.

The prognosis of *chronic catarrh*, *prolapsus*, *villous tumors*, and *polypi* is usually good, and a cure may be obtained in a short time. In *benign stricture* and in *ulceration* it is good in so far as a fatal termination is concerned. There are many cases, however, that require a long treatment; and we cannot promise some patients anything beyond a fairly-comfortable existence. In *malignant disease* the prognosis is exceedingly unfavorable. Unless the disease is recognized and removed almost at its inception, death will ensue in a few months. We can, however, prolong life from six months to three years, and make such patients comparatively comfortable while they do live, if they will submit to colotomy.

Treatment.

The first step in the successful treatment of the conditions under discussion is to search out the cause and remove it, else all remedies given to arrest the frequent stools and discharges will be of no permanent benefit. We shall not attempt in this chapter to enter into the minute details of the treatment of the various pathological conditions that might cause frequent stools or discharges of various kinds. We shall mention only the most salient features, referring those who desire further information to other chapters wherein treatment of these diseases is

discussed at length. In all treatments the diet should be restricted to non-irritating, easily-digestible foods, such as soup, soft-boiled eggs, pure beef-juice, broiled steak, plenty of milk, etc. Regular hours for eating, sleeping, exercising, and attending to the calls of nature must be insisted upon, for irregularities in living are largely responsible for many of these diseases. When there is any constipation it should be corrected by massage of the intestines, assisted by moderate quantities of some mild cathartic mineral waters or a tonic pill composed of aloin, strychnine, and belladonna, given three times daily. Strong purgatives are contra-indicated; their effect is temporary, and frequently they only increase the irritation already present. The treatment proper should be both

1. Palliative. 2. Operative.

Chronic Catarrh.—There are two essential features in the treatment of this condition: first, *absolute rest in bed* in the recumbent position; second, the bowels should be kept *clear* of all irritating ingesta. In addition to these, the rectum and colon must be flushed daily with large quantities of boiled, filtered water and antiseptic and astringent solutions. We have been in the habit of injecting, through a colonic tube, a quart of water containing thirty grains of the nitrate of silver twice a week. In the meantime some good solution, such as weak alum-water,—say, two teaspoonfuls to half a gallon of water,—is injected every night. A favorite injection is composed of boiled linseed-oil, two ounces; subnitrate of bismuth, one drachm; and the balsam of Peru, two drachms. Mathews, of Louisville, prefers the following:—

℞ Sweet almond-oil, ... Oj (473.11 c.cm.);
Subnitrate of bismuth, ... ℥iij (93.31 grammes);
Iodoform, ... ℥j (3.88 grammes).
Sig.: Shake well and inject one ounce twice a week.

We have recently tried this prescription in two very aggravated cases and were well pleased with the results. A

fountain-syringe will do to flush the rectum, but we much prefer a Davidson or large, hard-rubber piston-syringe, when the medicine is to be thrown into the colon, for two reasons: In the first place, when attached to the tube, if the latter get lost in a fold of the mucous membrane, the water can be thrown against it with such *force* as to raise it, and the tube will then pass upward into the sigmoid and the colon; in the second place, the exact amount of medication that we desire to use can be thrown into the bowel. On the other hand, when the fountain-syringe is used, a small quantity is liable to be lost in the long tubing.

Stricture of the rectum requires both palliative and operative treatment. The object in the first is to alleviate the pain that the patient may obtain rest, and is best done by keeping the bowel clean by flushing it with antiseptic solutions, to be followed up by the use of soothing lotions, applications, and ointments. The operative procedures resorted to for the relief of strictures are three in number (see chapter on stricture):—

1. Colotomy.
2. Posterior proctotomy.
3. Dilatation:
   (*a*) Gradual or (*b*) forcible.

We might add that in *cancer* the indications for treatment are almost identical with those of stricture.

Polypi.—The treatment of polypi is very simple. They are seized with a pair of catch-tooth forceps, pulled down, ligated, and that portion external to the ligature excised.

Prolapsus in mild cases should be treated by astringent injections, and nitric acid applied to the redundant tissue. When an operation is indicated there are a number to choose from, but the most satisfactory is to draw a Paquelin cautery-point over the redundant mucous membrane a number of times from above downward; if it is a very bad case the point should be pressed deeply into the sphincter muscle in two or three places. Some prefer excision of the protruding portion of the gut, and still others recommend certain plastic operations.

Ulceration.—Simple ulceration of the rectum or the sigmoid will usually heal when kept clean and stimulated by the application of nitrate of silver (gr. xv to the ounce), balsam of Peru, calomel, and the stearate of zinc with iodoform, menthol, or ichthyol. When the ulceration is chronic, it will be necessary to either divulse or incise the sphincter and curette the ulcer. The after-treatment consists in keeping the rectum clean and applying the stimulating medicines just named; in all probability the ulceration will be perfectly healed in two weeks.

Villous Tumors.—Villous tumors are best removed by transfixing their bases with double ligatures. This ligature is to be cut and each side tied separately.

Fecal Impaction.—Fecal impaction can be relieved by abundant and frequent injection of hot water, oil of turpentine, etc., in conjunction with frequent massage of the fecal tumor.

ILLUSTRATIVE CASES.

Case XXXI.—Chronic Diarrhea Caused by Ulceration.

I present this case from the fact that it is of interest to both the surgeon and the general practitioner. The patient was a married lady 30 years old. She informed me that she had suffered from diarrhea for five years, often going to the closet eight or ten times a day. She had experimented with various medicines, she had been prescribed for by prominent physicians, and she had taken patent nostrums, but all to no purpose. The Chinese doctor had been consulted; he failed to cure her; she then tried osteopathy with a like result. Becoming discouraged, she went to her family physician; he referred her to me for treatment. An examination revealed the presence of several unhealthy ulcers extending from the upper margin of the external sphincter below to the upper portion of the internal. They varied in size from that of a green pea to a quarter of a dollar, the largest one being on the posterior surface. After the patient was anesthetized and the sphincter divulsed, I curetted the ulcers and incised the large one, which was situated directly over the muscle, to prevent its contracting. The ulcerated area was then brushed over with silver nitrate. On the third day after the operation she had an action from her bowels. The rectum was then irrigated and the silver applied to the ulcer again. The same procedure was carried out every three days for a month, when the ulcers were entirely healed. During

this time she had not the slightest tendency to diarrhea. At the end of six weeks I lost sight of her and did not see her again for twelve months, when one day she called at my office and informed me that she had entirely recovered.

Case XXXII.—Chronic Diarrhea Caused by Rectal Polypi.

Mr. W. B., a photographer, came to me suffering from a chronic diarrhea of four years' standing, with the following symptoms: He had from four to ten actions daily, which were accompanied by a great deal of pain and straining. The stools were always liquid and consisted of mucus. The bowel felt as if some foreign body were within the rectum, exciting almost constant irritation and a desire to go to stool. He had undergone treatment from a number of physicians, who diagnosed his case as one of simple chronic diarrhea and prescribed accordingly. On account of the large quantities of mucus discharged, I suspected some local disease of the colon or the rectum, and proceeded to make a digital examination. Immediately upon the introduction of the finger, I detected a large, soft tumor the size of an English walnut. Further examination revealed the presence of another equal in size. The finger could be passed around them, and their attachment to the rectal wall was located with little difficulty.

Treatment.—He was chloroformed, placed in lithotomy position, and the rectum irrigated. The tumors were in turn seized, pulled downward, and the author's clamp was tightly adjusted to the *pedicle* at its junction with the mucous membrane. That portion of the polypus external to the clamp was then excised (as in the operation for hemorroids) and the stump carefully cauterized with a Paquelin cautery. The patient was placed in bed, and the nurse instructed to keep him quiet for thirty-six hours. On the third day his bowels acted, and he was allowed to walk around some. At the end of one week he returned to the gallery, and from then to the present time, two years after the opration, he has not been troubled with diarrhea. I recite this case for the reason that it proves beyond a doubt that the frequent stools were the result of the irritation excited by the presence of the *polypi*, and not from any abnormal condition of the stomach or small intestine.

CHAPTER XXIII.

CONSTIPATION.

It is doubtful if there is any other ailment that we are subject to which is more prevalent, causes more annoyance, or taxes the patience of both physician and patient more than persistent constipation. It is not always an easy thing to tell just where health leaves off and constipation begins. Physiology teaches us that we ought to have at least one free action in every twenty-four hours; yet it is an every-day occurrence to see those who do not have an action more than once every two or three days, and still others who may have two actions daily, and so far as appearances go one is just as healthy as the other. Constipation is one of the most frequent symptoms of rectal disease, and at the same time one of the most common causes of the same. In fact, it may be a symptom of some other disease or an independent disease of itself. There are so many causes of constipation that we shall not attempt to record them all, but will mention the more common ones under the following headings:—

1. Mechanical obstruction.
2. Defective peristaltic action.
3. Deficiency of the secretions.
4. Sundry causes.

Mechanical Obstruction.

Under the first heading are included all those causes whereby the feces are prevented from having a free passage along the intestinal tract,—as stricture, congenital or otherwise; polypi, tumors within or without the bowel, intussusception, enlarged prostate, prolapsed uterus, etc.

Defective Peristaltic Action.

There are many things that play their respective parts in causing a diminished peristaltic action; irregular habits in

living, however, heads the list, and the manner in which it does so becomes at once apparent when we study the act of defecation. Modern physiology teaches that the feces collect in the lower portion of the sigmoid and remain there until shortly before stool, when peristalsis commences and they are moved downward into the rectum, and the desire to go to stool is felt. If this warning of the approach of the feces is *appreciated* and the contents of the rectum *promptly expelled*, all is well; on the other hand, when this hint is ignored, reverse peristalsis returns the feces to the sigmoid, where they remain until they are again propelled into the rectum, causing the sensation just described. If this, like previous sensations, is ignored day after day, the mucous membrane soon loses its sensitiveness and the muscular coat its tonicity, and, as a result, large quantities of fecal matter may accumulate in the sigmoid and the rectum without causing the least desire to go to stool. Irregular time for eating and improper diet are prone to diminish peristaltic action; for it is a well-known fact that foods that contain very little liquids and those that leave little residue are liable to accumulate in the bowel and some time press upon the nerves sufficiently to produce a paresis of the same.

Deficiency of the Secretions.

Many of the causes that produce a diminished peristaltic action are equally prone to lessen the normal secretions of the bowel. Again, the intestinal secretions are diminished in certain hepatic diseases where there is a deficiency in the amount of bile emptied into the bowel, also when there is inactivity of the intestinal glands from any cause.

Sundry Causes.

Under this heading are included those causes that are the result of disturbances that are more general in character, such as diabetes, melancholia, insanity, old age, and many others, including those that are purely of *local origin* in the terminal

portion of the colon and the rectum. We will mention these in the order of their frequency as causes of constipation :—

1. Anal fissure.
2. Ulceration.
3. Stricture (benign or malignant).
4. Polypus.

Fissure and ulceration are causes because people thus afflicted put off going to stool just as long as they can, on account of the pain that accompanies and follows the act of defecation. The others produce constipation because they obstruct the passage of the feces.

Symptoms.

Among the symptoms other than the irregularity and incompleteness of the stools may be mentioned headache, inattention to business, loss of memory, melancholia, sallow complexion, indigestion, loss of appetite, etc., besides a long train of nervous and reflex phenomena. Perhaps the most frequent and annoying reflex symptom that accompanies constipation is the frequent spasmodic contractions of the external sphincter muscle. Sphincteric spasm is excited every time the fecal mass presents itself at the anus and is not promptly expelled. Again, the sphincter is kept in a constant state of irritability when the feces collect in large quantities within the colon, sigmoid, or rectum, because of the reflex disturbances set up as a result of the pressing of the mass upon the very sensitive mucous membrane and anus. The result of all this is that the muscle becomes hypertrophied and very strong from the additional work. Frequently the spasm of the muscle is caused by the presence of a fissure in the mucous membrane caused by the expulsion of hardened feces. In fact, we believe that in most cases of constipation, accompanied by hypertrophy of the external sphincter, a careful examination will reveal the presence of a fissure, an ulcer, or both. The muscle now, instead of being a voluntary help in the act of defecation, forms an obstruction beyond control of the will and only aggravates the condition

that originally gave it birth. In another part of this chapter we mentioned the fact that certain local conditions of the rectum might be put down as causes of constipation; here we wish to say that constipation is the most frequent cause of rectal disease, and that any one of the following local diseases of the rectum and anus may be a symptom of constipation:—

1. Anal fissure.
2. Ulceration.
3. Hemorrhoids.
4. Prolapsus.
5. Proctitis and periproctitis.
6. Neuralgia and coccygodynia.

Anal Fissure.—When an action has been deferred for several days the feces accumulate; the watery portion is absorbed; they become dry, hard, nodular, and very difficult to expel, ofttimes making a rent in the mucous membrane that eventually becomes an irritable fissure.

Ulceration.—Ulceration of the rectum and of the sigmoid is a frequent symptom of persistent constipation, because the pressure on the nutrient blood-vessels by the fecal mass causes a necrosis of the tissues.

Hemorrhoids.—Constipation is productive of hemorrhoids in several ways; firstly, because of the obstruction to the return of the venous blood; secondly, because of the venous engorgement of the hemorrhoidal veins during the violent and prolonged straining every time there is an action; thirdly, because of the general laxity of the tissues in those suffering from constipation.

Prolapsus.—A prolapsus of the mucous membrane or of the rectum may be caused by the fecal mass's pushing it down in front of the mass when an action does occur. Again, prolapsus may be the result of a paresis of the bowel caused by pressure of the mass on the nerves.

Proctitis and Periproctitis.—An inflammation of the rectum and surrounding tissues, that may or may not terminate in abscess and fistula, is frequently caused by constipation as a result of injury to the very sensitive mucous membrane by the hardened feces; and, further, from the fact that feces, when long retained, undergo decomposition and expose any unsound portion

of the mucous membrane to the many septic organisms contained within them.

Neuralgia and Coccygodynia.—The fecal mass within the sigmoid sometimes presses upon the neighboring nerves, causing reflex pains to be felt in the region of the sacrum and coccyx; such pains are usually diagnosed as neuralgia of the rectum, or coccygodynia.

In addition to causing the diseases just enumerated, constipation will aggravate any other disease of the rectum or colon that might be present. It at once is obvious that the treatment of constipation should be perfectly understood by all who may confine their practice to rectal and anal diseases.

Treatment.

Many papers have been written outlining the treatment of this annoying condition, and a thousand and one remedies have been recommended for its relief, and almost as many have proven failures. It is a question if there have not been more cases of persistent constipation caused by strong purgatives than have been cured by them. We wish to state that we believe that certain tonics and mild laxatives (preferably reputable mineral waters) are of great value in the beginning of constipation; and, further, that they sometimes do good in constipation of the worst form. All who have treated many cases of constipation, however, must have noticed how quickly the remedies prescribed for the relief of this condition lose their power. The dose has to be repeated or, still better, a new drug substituted; in a short time another must be selected, and so on until both patient and physician are disgusted. In our own practice we have not used any medicine for a number of years in the treatment of constipation. Our results have been markedly better since we adopted our present plan. We do not wish to go on record as stating that we can cure *all* cases of constipation without medicine; but we desire to say that almost every case can be benefited, and a very large percentage of them perfectly cured,

without *any medicine whatever*,—a fact that we have demonstrated in private practice and to classes at the University Medical College many times. The plan that we follow we have designated the

NON-MEDICINAL METHOD.

This method of treating chronic constipation has been outlined before by us in a number of medical societies and in periodicals during the last four years. We first called attention to this method of treatment at the Kansas City Academy of Medicine in January, 1891. Then before the Jackson County Medical Society of this city, in February, 1892; next at the Missouri Valley Medical Society at St. Joseph, Mo., March 16, 1893. The paper last mentioned appeared in the *Medical Herald* the same month. The suggestion came to us through our operations for the relief of certain pathological conditions about the anus wherein the external sphincter muscle had been divulsed to insure complete rest. Our patients would frequently remark that we had cured them of their constipation as well. At first we did not understand how it happened; but, after studying the matter closely, we came to the conclusion that it must be due to the dilatation, and, on referring to Allingham's work on rectal diseases, we found that he had had the same experience and advised divulsion as one of the essential features in the treatment of constipation. We then tried it in a number of old cases that we had attempted to cure by medication, and the results were very satisfactory, but not all that we had hoped for. In some the benefit was permanent, while in others it was only temporary; we came to the conclusion that other features must be added to the treatment in order to combat successfully this annoying condition. After experimenting with a large number of cases we added the following features, which we practice, as a routine, after any local condition that might aggravate the costiveness has been corrected:—

1. Divulse the sphincter.
2. Practice frequent abdominal massage.

3. Use copious injections of warm water into the colon and the rectum.

4. Apply electricity over the abdomen and per rectum.

That part of the treatment just referred to must be carried out by the physician; the patient, too, must do his duty by observing the following rules:—

5. Go to stool daily and as near the same hour as is convenient.

6. Correct errors in diet.

7. Drink an abundance of water and eat sufficient fruit.

8. Take plenty of out-door exercise daily.

9. Take a cold bath every morning, to be followed by thorough rubbing.

10. Dress warmly in winter and coolly in summer.

11. Change occupation or climate if the case demand it.

12. Be temperate in all things.

Dilatation.—When the constipation is caused or made worse by an *hypertrophied* sphincter, or a spasm of the same from any cause, thorough divulsion should be practiced at the earliest opportunity, and great care must be taken not to lacerate the muscle. We have a case of complete incontinence under treatment at the present time, caused by a too rapid and careless divulsion. Dilatation can be accomplished in two ways, either by immediate or gradual divulsion, the first to be done under an anesthetic, by inserting the two thumbs into the anus and stretching the muscle thoroughly in every direction until there is no resistance. Many dilators have been devised for this purpose (see pages 169 and 170), but none of them have any advantage over the fingers, and are more apt to do injury to the bowel. Gradual divulsion is selected in cases where an anesthetic is deemed unsafe and where the patient's consent cannot be obtained to take the same; it can be accomplished also by the aid of almost any of the many forms of rectal bougies. We prefer the soft rubber (Wales's), which can be had in any size. The Wales bougies are about twelve inches (3 decimetres) in

length and have an opening through the centre through which the colon and the rectum can be douched if the occasion demand it. They are better than the short Pratt or the Ideal, because in addition to the dilatation they seem to act as an irritant to the sensitive mucous membrane, reach higher up the bowel, and excite renewed peristaltic action. It is better to commence with a small size,—say, a No. 6,—leave it in a few minutes, until the muscle becomes used to it, when a larger size may be selected, and so on until a No. 12 can be introduced with ease.

It is better to do too little than too much at the first sitting, for sometimes the sphincter is very stubborn and requires careful handling or its irritability will only be increased. Patients come to our office two or three times each week, the bougies are introduced and allowed to remain within the bowel until *sphincteric resistance is overcome*, and many times their withdrawal will be followed by a copious stool. Immediate divulsion is seldom required more than once if a large-sized bougie is used from time to time afterward, just as in gradual divulsion. When thorough dilatation has been accomplished the muscle, instead of acting as an impassable barrier to the discharge of the feces, now offers only passive resistance, sufficiently strong, however, to prevent any unpleasant accidents, yet not strong enough to resist the power of the expiratory muscle when brought into full play during defecation. As a result of this, any large quantities of feces that have accumulated can be expelled, thus doing away with one of the sources of irritation, and the tonicity and sensibility of the bowel may be restored from the pressure's being taken off neighboring nerves.

Abdominal Massage.—This we regard as one of the most essential features in the treatment of habitual constipation. Massage is quite ancient, having been practiced by Hippocrates. It was not until quite recently, however, that the physicians at home and abroad recognized in it a powerful remedial agent if properly handled, and gave it their scientific attention, thereby

lifting it out of the hands of "charlatans" and "robbers," where it had long been left. We have been practicing it extensively during the last four or five years, in connection with other features mentioned in the treatment of constipation, and have found it to be a most valuable adjunct. With the patient in the recumbent position on a table (Allison's) which can be manipulated in such a way that the head may be raised or lowered and the body rotated from side to side, that the intestines may be changed from one position to another, we make gentle but *firm* pressure, with the palm of the hand and ball of the thumb over the large intestine, beginning in the right iliac fossa. The course of the colon is followed into the left, accompanying the pressure by kneading the parts thoroughly with the fingers. This same procedure should be gone over several times, and should occupy in all about ten or twelve minutes. In the beginning the massage should be practiced every other day; later on in the treatment, twice a week will suffice.

Besides massage of the large intestine, special massage must be given to the liver and small intestine when there is a diminution in the amount of bile discharged and of the intestinal secretions. The patient cannot give himself massage, because every effort on his part will be followed by contraction of the abdominal muscles, which prevents deep manipulations. If a patient is unable to pay for the treatments, we would recommend, as do the German physicians, that he take a metal ball or one of those used for bowling, weighing from three to five pounds, covered with cloth to prevent chilling the skin, and while in the recumbent position roll it daily over the course of the colon.

Massage renders valuable assistance in the treatment of constipation in several ways:—

1. It improves the circulation and stimulates the nerve-centres to renewed action.

2. It loosens adhesions and dislodges and breaks up fecal impaction.

3. It restores tone to fatigued and inactive muscular fibres.

4. It excites the liver and intestinal glands to renewed action.

5. Altogether it assists normal peristalsis to take place.

Copious Warm-Water Injections.—In beginning the treatment of constipation much benefit can be had from daily injections of warm water when properly given; they soften any fecal mass that might be lodged in the bowel and allow it to be discharged. It is not sufficient to flush the rectum alone, but the colon should be reached as well, for the feces become impacted more frequently in the latter than in the former. To do this well one must have a colonic tube from eighteen to twenty-four inches (46 to 61 centimetres) in length and a good syringe,—preferably a Davidson, bulb, hard-rubber piston, or a fountain,—the nozzle of which can be inserted into the tube. The syringe is then filled and the patient requested to place himself in the Sims or recumbent position. When the tube has been well oiled with some stiff lubricant, it is passed slowly and gently up the bowel until it becomes lodged beneath a fold of the bowel. A few ounces of water are then allowed to pass through it; at the same time pressure is made upward with the tube. In this way the fold will be lifted upward out of the way each time the tube meets with resistance; the same procedure must be gone through with until the tube is well within the colon. Then let the water run until the colon is distended. It will take anywhere from half to a gallon of warm water, or more, depending upon the amount of feces present. The water should be retained as long as possible that it may permeate the mass. The injections may be kept up until normal peristaltic action and glandular secretion have been re-established, and no longer.

It has been demonstrated frequently that when normal defecation is interfered with by daily injections of water (Hall treatment), the bowel makes no attempt to get rid of the contents, but patiently awaits the convenience of the interested person and the injection which relieves it of all duties.

Electricity.—Electricity has been very highly recommended by many writers on the treatment of constipation. We have used it a number of times with *varied* success. Some prefer galvanism, others faradization. One pole may be placed over the spinal column and the other moved about over the course of the colon, or one over the spine and the other within the rectum. As yet, we have not been convinced that electricity alone is sufficient to cure very persistent cases of constipation, but are quite positive that much benefit can be had when it is properly used in conjunction with dilatation, massage, etc. Its action is similar to that of massage in that it restores muscular tone and glandular activity.

The features of the treatment just referred to should be carried out by the physician himself, while those to follow are to be practiced by the patient under the supervision of the physician.

Go to Stool Daily at the Same Hour.—Patients should go to stool daily at the same hour (preferably just after the morning meal). This may seem unimportant, but experience has shown us that the bowel can be educated to act at the same hour daily; or, on the other hand, not more than once in two or three days in those who are careless in their habits. This may not be accomplished in those who have persistent constipation, at *first*, but if they will persevere in going to the closet at or near the same time every day, and devote their entire time while there to the expulsion of the fecal contents, *and not make it a reading-room*, they will bring about the desired result. Patients are prone to become discouraged at first; they should be informed that it does not make any difference so far as the ultimate result of the treatment is concerned if the bowel does not act regularly during the first few days.

Correct Errors in Diet.—This is one of the most essential features in the treatment. All foods known to disagree with patients should be discarded. We shall not have space to lay down a fixed diet-list, but desire to say that it should consist as

far as possible of easily-digestible foods, intermediate between meat on the one hand and milk on the other, and, in children, proportionately rich in fats, albuminoids, and sugars, while poor in starches. All meals should be served at *regular* hours and under pleasant surroundings; it has been observed that digestion is more or less interfered with during anger and sorrow.

Drink an Abundance of Water.—There are few better laxatives than a glass of *cold* or *hot* water, taken upon an empty stomach before breakfast. Water prevents the feces from becoming dry and impacted. A reasonable amount of fruit, such as apples, oranges, and figs, should be eaten; they will do much toward relieving the constipated condition.

Take Sufficient Out-door Exercise.—Persons suffering from constipation should take regular out-door exercise; and, if convenient to a gymnasium, we would recommend that they spend half an hour each day developing the various muscles of the body. There is not a question but the Germans, who are noted for their out-door sports and gymnastic exercises, suffer much less from constipation than we Americans, who do not take time to do anything but work for the "Almighty dollar."

Take Baths Daily.—The best time to take them is before breakfast. The colder the water, the better; the bath should be followed by a thorough rubbing of the skin with a Turkish towel. This stimulates the circulation, increases peristalsis, and opens up the pores of the skin. Assimilation will then take place. Altogether one feels like a new man and ready to undertake the arduous duties before him for the day.

Dress to Suit the Season.—It is a well-known fact that cold is conducive to constipation and warm weather to diarrhea; hence it is very essential that we should dress warm in winter and cool in summer.

Change of Business and Location.—This is absolutely essential in some cases of persistent constipation, when all other means have failed to be of any benefit. It is a recognized fact that a sedentary occupation is a frequent cause of constipation,

and that a change to a more *active* one in the open air will sometimes cure it, and, further, that persons who suffer from constipation in one climate are relieved when they change to another. Admitting these to be facts, we think we are justified, in certain very obstinate cases, in insisting that the patient shall change his occupation, his location, or both.

Be Temperate in All Things.—Excesses and irregularities in living play an important part in producing and prolonging constipation; hence moderation in the manner of living should be encouraged.

Altogether we have treated 250 cases of obstinate constipation by the "non-medicinal method." Of this number 140 were females and 110 were males, their ages ranging from infancy to 85 years. The following table will show the results of the treatment:—

Cured,	150
Marked improvement in,	60
Slightly improved,	15
Unimproved,	25
Total,	250

In a short time we expect to publish a book on constipation and diarrhea, and their non-medicinal treatment.

CHAPTER XXIV.

IMPACTION OF FECES.

The impaction of feces may be due to numerous causes. Frequently it is due either to a loss of muscular tonicity or to some paralytic affection, and sometimes is a result of the quality of the food eaten. This was demonstrated during the Irish famine of 1846, when potatoes of a very inferior quality were the only articles of diet. In fact, anything which will produce constipation may at times result in fecal impaction. Often some indigestible substance, as a plum-seed, etc., will be found in the centre of the mass, the fecal matter having collected around it much as the snow-ball collects the snow when rolled on the ground. The impaction, while usually found in the rectal pouch, may take place in any part of the colon. Hence, if we suspect we have a case of impaction and do not find it in the rectal pouch, we should examine the sigmoid and the colon thoroughly. While it occurs more frequently in elderly persons, no age is exempt. Women are more liable to have impaction than men, owing to their irregular habits, pregnancy, etc.

Symptoms.—The symptoms, indicated by the collection of large fecal concretions, may become formidable by producing constipation. There may be a sense of weight and fullness in the rectum and severe bearing-down pains similar to those during labor. The pains, however, may be reflected up the back, down the loins, or to the abdomen. The last symptom, together with the diarrheal discharges which are sometimes present, are very misleading; and a careful examination should be made to detect the accumulated mass. Simply because a patient has a slight movement daily is not a sure sign that there is no impaction, for the liquid feces may be discharged around the mass. As the accumulation increases the symptoms may become exaggerated. There may be vomiting, coldness of the feet, jaun-

dice, and shooting pains down the limbs. A collection of feces in the colon or the rectum may be mistaken for morbid growths which occur in these localities, or for an enlarged prostate or uterus. The diagnosis can usually be made, however, by introducing one finger high into the rectum and the vagina, while palpation is made over the course of the colon with the other hand. In this way the mass can be located.

Treatment.—This consists in the early removal of the entire mass, which may be done in a variety of ways. If the case be an urgent one, the sphincter should be thoroughly dilated and the mass removed in segments, either by the finger or the handle of a spoon. This will be materially hastened by the injection of large quantities of soap-suds through a long rubber tube introduced into the rectum or colon; this to be determined by the location of the mass. If there is no indication of inflammation or ulceration, nothing will assist in breaking up the mass, when situated high up in the rectum or colon, more readily than abdominal and pelvic massage of the colon from right to left in the direction of the anus. In women, when the finger is introduced into the vagina and pressure made downward the mass may be dislodged. We have been in the habit of keeping the sphincter dilated with bougies and flooding the rectum and the colon with soap-suds daily for some time after the accumulation has apparently disappeared, and we have been much pleased with the results. We never use purgatives for the reason that the obstruction is purely mechanical and is concentrated. We sometimes prescribe a mild laxative after the mass has come away, if there is a tendency to constipation, but we prefer to overcome the latter by massage, regular habits, etc. The treatment for constipation has been fully treated of in the previous chapter.

CHAPTER XXV.

AUTO-INFECTION FROM THE INTESTINAL CANAL.

As we understand it, auto-infection from the intestinal canal means that pathological condition resulting from the absorption of poisons generated within it. It matters not whether they are the result of chemical, putrefactive, or fermentative changes or bacterial action.

We give this topic a distinct caption because we are sure its importance has been very much underrated, and because it is a subject that writers on rectal diseases heretofore have ignored. This is surprising, too, when experiments have shown that, in the main, poisons are generated in the colon. That the organism might be poisoned by the products generated within it was, until quite recently, looked upon with much skepticism. To-day we are forced to admit that such a thing is of common occurrence. Recent investigators have given an abundance of proof that the various organs of the body—the brain, the liver, the lungs, the kidney, etc.—are frequently invaded by the bacillus coli communis and other micro-organisms and some pathological condition induced as a result thereof. They have gone a step farther than this and demonstrated the fact that toxic substances that are disease-producing, independent of bacterial action, are being constantly formed within us in health.

As regards auto-infection from the intestinal canal, we have as yet very little proof of the absorption of poisons from this source or as to the manner in which it occurs. Many of our best clinicians and investigators, however, express themselves as believing that the cause of many diseases, the pathology being obscure at present, will be explained when we become more familiar with the part played by the contents of the human sewer.

We may have auto-infection from any portion of the intestinal canal. It is claimed by some that it occurs more frequently in the small intestine than in the large, for the reason that here there is an increased amount of water in the feces that may be conducive to the solution and absorption of certain bacteria and their products. On the other hand, there are many who believe that auto-infection takes place more frequently from the large intestine (especially from the descending colon, the sigmoid, and the rectum) because the decreased watery elements leave the feces more nearly solid, and they remain longer and putrefaction takes place, affording a rich field for the multiplication of the septic micro-organisms and their products. These disturbing elements are taken up by the circulation and possibly by the lymphatics and thus disseminated to all parts of the body. Before we can intelligently study the trouble that might result from poisons created within the intestinal canal, we must familiarize ourselves with its normal contents. We shall mention only the gross contents of the large intestine for the reason that we intend to confine our study of auto-infection from the intestinal canal as far as possible to the colon. Grossly speaking, the contents are made up of refuse products of food, the excrementitious portions of the digestive fluid, water, gases, and animal alkaloids, together with a multitude of micro-organisms and their products. At present we know but little of these gases and alkaloids as regards their properties and action in health and disease, and the same may be said of the micro-organisms, with few exceptions. We cannot help believing, however, that in proportion as we become familiar with the poisonous agents contained in the digestive fluids and excreta we shall become more familiar with many diseases now called *functional* for the reason that we are not very familiar with their pathology. Perhaps Bouchard has done more work along this line than any other man. It was him who demonstrated the fact that many poisonous alkaloids are being constantly formed in the digestive secretions. In fact, this writer has said:

"The organism in its normal, as in its pathological, state is a receptacle and a laboratory of poisons. Some of these are formed by the organism itself, others by microbes, which either are the guests, the normal inhabitants of the intestinal canal, or are parasites at second hand, and disease-producing." He has shown that the peptones of normal digestion contain poisonous alkaloids, and a solution of them as they appear in the stomach as the result of gastric and, lower down, as a result of pancreatic digestion will, when introduced into the blood of an animal, produce general disturbances and death; and also that a sufficient amount of poison to cause death in a short time is secreted by the kidneys when, from any cause, the poison is allowed to accumulate or is absorbed as a result of the urinary tract's becoming denuded of its epithelium from the tubuli of the kidney to the meatus.

When we have renal suppression resulting in death, Bouchard attributes it to the absorption of poisons normally "secreted," and not to an accumulation of urea; and he says that a "complexity of phenomena is hidden under the name 'Uremia.'"

Park, under the caption of "Intestinal Toxemia," includes first a condition of unusual or at least undesirable activity in the contents of the intestinal canal, by which, whether due to common or specific forms of bacteria, the ptomaines of putrefaction are produced in such a manner or of such a quantity that they are absorbed through the intestinal mucosa and are distributed over the body, by which a condition of intoxication is produced. In this form it is not meant to imply that any of these bacteria gain access to the circulation, but that a more or less profound toxemia is produced. Second, a form in which the common or uncommon bacteria met with in the intestinal canal pass into and infect the living tissues of the patient and produce local and general infection in addition to the toxemia above described. The first form occurs alike in medical and surgical cases. Here we have a demonstration, on the one hand, of how

we may become intoxicated from the *alkaloidal* poisons formed during digestion, and, on the other, as a result of unusual activity of *bacteria*—the normal inhabitants of the intestinal canal—and their ptomaines. As we become more familiar with the almost innumerable poisons within us, and their effect when injected into the lower animals, we are forced to admit that we are constantly tottering on the brink of self-destruction, and that we only need to disobey some one of nature's laws to upset the equilibrium and to fall a prey to some one of these poisons. Our Creator, however, foresaw all dangers and provided us abundantly with safeguards with which we can destroy or neutralize the poisons, on the one hand, or throw them off, on the other, as soon as they are formed.

It becomes apparent, then, that for auto-infection to take place two things are essential:—

1. There must be an impairment of physiological action somewhere.

2. That poisons are being constantly formed in us in health.

We know that in the physical system every cell has a duty to perform, and the same can be said of those aggregations of cells which we call organs. Impair or destroy a single one and the economy suffers, and the effect is in proportion to the importance of the work normally allotted to it. Now, if from any cause the liver, the lungs, the skin, the kidneys, or the blood should get out of order and fail to perform its function, what is the result? Poisons that are being constantly secreted are not being rendered harmless, on the one hand, or are not being thrown off, on the other, but are allowed to accumulate, enter the circulation (possibly lymphatics), and are distributed throughout the body, causing local or systemic infection, as the case may be.

Again, the physical soil is prepared for absorption of poisons by anything that will cause a lesion of the intestinal mucosa or distend, press upon, or weaken the walls of the intestine,

such as the accumulation of feces, tumors, strictures, ulcerations, inflammations, operations, etc.

Just so long, however, as the emunctories are working in harmony and perform their individual functions and there is no lesion of the intestinal mucosa, all is well, and all poisons, no matter whether they are the products of decomposition or of bacterial action, will do no harm for the reason that they are thrown into a special reservoir (the liver), where they are destroyed or neutralized and afterward discharged from the body. Schiff ascertained that by injecting certain alkaloids into a branch of the portal vein the proportion of poison in the blood as it came from the liver was much lessened. The blood, however, constantly takes from the organs poisons as soon as they are formed and renders them inert, especially if the poisons are of bacterial origin.

Recent investigations have demonstrated that the serum of arterial blood contains some substance (defensive proteids) that acts in one of three ways: First, by killing the bacteria (bactericidal); second, by attenuating or weakening the bacteria; third, by neutralizing or destroying the toxins. It has been shown that the blood taken from one animal that has been made *immune* against certain infective diseases (tetanus, diphtheria, etc.), when injected into another animal or human being, renders such animal or person immune to that disease; as yet investigators have been unable to isolate any *one* "defensive proteid" that will prove effective against infective diseases in general, but believe they will be able to accomplish this in the near future. Hankin classifies defensive proteids into two groups: 1. Those existing naturally in animals. It is a noted fact that the rat is immune to certain diseases to which the guinea-pig readily succumbs, and these are called *sozins*. 2. Those existing in animals *artificially* made immune, which he calls *phyloxins*. For sub-classes he suggests the prefixes *mico-* and *toxo-* to indicate sozins or phyloxins which destroy bacteria, or which destroy their toxins. From the above it becomes apparent that

the study of auto-infection is closely intermingled with that of immunity.

It is at times very difficult to determine, in cases of auto-infection, where health leaves off and disease begins; this is because of the fact that, on the one hand, these poisons are physiological factors, and, on the other, as soon as the system becomes susceptible, they become active pathological factors.

We have neither the space nor inclination to attempt to classify and point out the pathological significance of the various poisons generated within the intestinal canal. Hence, we shall at first mention only those manifestations which are due to colon infection, those which are *systemic* in character, and those which are of the most frequent occurrence.

Then we shall pay our respects to the colon bacillus (and associated bacteria) and endeavor to point out some of the pathogenic properties of this meddlesome little micro-organism which, we believe, will prove of interest alike to both the physician and the surgeon.

Perhaps the most frequent and immediate cause of auto-infection is "constipation," and more especially when complicated by a fecal impaction. In the latter case we have the retention of the feces for a variable length of time; as a natural sequence, effete matters accumulate in the bowel and, by remaining, undergo chemical changes, and poisons of the ptomaine and leucomaine classes are formed, which are as active as any poisons that could be introduced from without, as, for examples, typhoid fever and cholera, wherein the bacillus runs its entire course in the intestine.

As a result of the accumulation of poisons, we have systemic infection induced; it may or may not run a chronic course, *depending* upon the removal of the offending mass. If nothing is done to prevent the continued formation of poisonous products, they soon manifest themselves in the clinical pictures with which all are more or less familiar,—chlorosis and anemia. Patients suffering from chlorosis or anemia come to us com-

plaining of headache and a feeling of lassitude; they have a feeling of lassitude on arising in the morning; they are impatient and careless about attending to their usual duties; they do not care to read or talk, but are inclined to melancholia, preferring to be left to themselves; they are pale, have greenish-yellow complexion and a foul breath. They suffer from a depraved appetite, indigestion, palpitation, dizziness, and a host of other symptoms too numerous to mention. Too often they are treated for biliousness, malaria, or grip. They change from one physician to another until one is found who makes a correct diagnosis and succeeds in removing the feces and cures his patient without any medicinal treatment whatever. Many patients suffering from fecal toxemia become so saturated that they look not unlike a person with a malignant growth in an advanced stage. For the sake of illustration, let us study the phenomena in a case of extreme intoxication from the intestinal canal to ascertain its effect upon the various systems and skin.

1. Circulatory system.
2. Respiratory system.
3. Skin.
4. Nervous system.

The Circulatory System.—As a result of auto-intoxication we have a disturbance in the circulation; the cutaneous vessels become contracted, thus throwing an increased amount of blood into the central organs, and the body's equilibrium is interfered with. The pulse may be slow and full, on the one hand, or rapid and feeble, on the other, depending upon the extent of the intoxication and its influence upon the muscular fibres of the heart and upon the nervous system. Frequently the heart is very excitable and patients have fainting spells. Sometimes, instead of the blood being retained in the central organs, it seems to remain in the extremities and causes a dilatation of the veins. Hemorrhoids are almost invariably present in those who suffer from auto-intoxication for a considerable time.

The Respiratory System.—The effects of auto-infection on the respiratory system are not so numerous as they are on the

circulatory or nervous systems. Their effects are shown more quickly and in a more aggravated form when the intoxication is complicated with some lung trouble; and, *vice versâ*, all lung diseases become markedly worse when there is systemic intoxication, for there is deficient oxygenation of the blood. It would appear, from recent investigations, that the colon bacillus plays an active part in the causation of some forms of pneumonia and of empyema, but more frequently when there is a lesion of the intestinal mucosa. When the lungs are diseased the gravity is in proportion to the amount of tissue involved; when this is extensive and death ensues, it is due to auto-infection,—a result of the accumulation and absorption of carbonic acid and other poisonous elements that should have been eliminated by the lungs.

The Skin.—The skin shows the effect of the intoxication in its pale, muddy, unhealthy color, foul-smelling secretions, and in any one of the many skin diseases.

The Nervous System.—When there is auto-infection to any very great degree it manifests itself in some of the many nervous phenomena that we see so frequently in our every-day practice. One of the most frequent manifestations is a feeling of drowsiness, due to the effect of the absorption of one of the intestinal gases, likely that of sulphuretted hydrogen, which is known to have a soporific effect. Though the patients feel drowsy, they are poor sleepers; they roll and toss about the bed; they are frequently awakened by horrible dreams, or find themselves wandering about their rooms. In the morning, when they arise, they do not feel refreshed; but, on the contrary, they feel weak, exhausted, and find their clothing moist by a clammy, unhealthy perspiration.

We believe that a very large percentage of all headaches and neuralgias are due to auto-infection, it matters not where the pain is located. For we have many times witnessed the disappearance of headaches after the bowels had been completely emptied, without the assistance of a single dose of medicine.

Our neurological friends claim that a number of nervous functional diseases are often produced as a result of a fecal toxemia. Neurologists have proven, from a clinical stand-point, that some forms of insanity are undoubtedly caused by auto-infection from the intestines, due to the absorption of gases or poisons of the ptomaine and leucomaine classes. Epileptics nearly always have fewer attacks so long as the colon is kept cleaned out; some authorities believe that not a few cases could be cured if we would direct our attention to the intestinal canal, and through our treatment prevent the accumulation and absorption of the manifold poisons generated therein. Thus far, in speaking of auto-intoxication, we have incidentally mentioned constipation and fecal impaction as the prime factors in opening a way for the production and absorption of poisonous products. We should not do the subject justice, however, were we to leave the impression that infection occurs only when there is obstinate constipation. We have frequently treated patients who were unquestionably suffering from auto-infection, and nearly all, if not all, evinced the phenomena previously mentioned. Yet they gave no history of constipation; but, on the contrary, the intoxication was presented through a chronic diarrhea, and from other causes which we were unable to determine. Park tells us: "There takes place within the intestinal laboratory such a putrefaction as produces ptomaines which are at the same time toxic and cathartic in their action, so that the irritating material is expelled by virtue of the very poisons it has produced; and it furthermore often happens that the exhibition of a vigorous cathartic—for instance, one of the mercurials—will so admirably clean out the entire intestinal canal that not merely is the entire action prevented or checked when present, but that a most happy effect is exerted upon septic disturbances commencing elsewhere."

We have personally treated not a few patients suffering from an ulceration of the colon or the rectum where the ulcers were small and not unhealthy-looking, wherein the patients

were affected by systemic intoxication. They were very much emaciated, extremely nervous, had sallow complexions, were inclined to be melancholic, and, in fact, had all the symptoms likely to accompany auto-infection. Diarrhea is ever a prominent symptom of ulceration, and it complicates matters by rendering soluble and distributing the poisonous elements in the feces to any exposed point of the mucosa, thereby insuring their entrance into the circulation and spreading desolation anywhere they go. Not all cases of ulceration of the rectum and the colon are complicated with systemic infection, because many times the poisons are rendered inert or are thrown off before they have a chance to do much harm. Perhaps the most typical cases of auto-infection from the intestinal canal are to be found in patients suffering from stricture of the rectum and colon.

It is here that we find the two conditions that are favorable to auto-infection: fecal impaction above the point of constriction, on the one hand, and frequent stools, on the other, induced by a reflex peristalsis. The former prepares the field by causing a distribution and ulceration of the walls of the bowel and at the same time offers a good culture-medium for the micro-organisms and favors putrefaction and fermentation, while the latter renders the poisons capable of being scattered about. As a result, more poisons are generated and absorbed than nature can take care of; the system becomes saturated with them and such sufferers look almost as bad as if they were infected with a malignant growth. In fact, any disturbance of the rectum and the colon that will cause a diarrhea or constipation predisposes the individual to auto-infection and its many evils.

We have in the preceding pages called attention to some general manifestations which we believe are caused by the absorption of septic material from the intestinal canal. We now invite your attention to the study of a number of diseases in and around the rectum and other organs, which, if not directly caused by intestinal bacteria, are certainly aggravated and continued through their instrumentality. As for the single germ of

intestinal origin, the most frequent disturber in neighboring and distant parts, the *colon bacillus communis* leads them all. This germ seems to be the king of disturbers and has been found in nearly all the organs of the body, and under circumstances that have led investigators to believe that it unquestionably has pyogenic properties. Many other germs, with known pathogenic properties, have been proven to be identical with this bacillus; and at present it is considered identical with the following organisms: The *bacillus Neapolitanus*, Brieger's *feces bacillus*, Passet's *bacillus pyogenes fœtidus*, the *urinary pyogenic bacterium* (Clado and Albarran), which Morelle and Krögius considered identical with the *bacillus lactis aërogenes* and the *urobacillus septicus*, and as the *septic bacterium* discovered by Bouchard. Familiarity with this bacillus is so important, alike to the physician and the surgeon, that we will discuss it in detail.

The following description of the appearance, growth, properties, pathogenesis, etc., of the *bacillus coli communis* we copy from Ball* because of its brevity:—

"Bacillus Coli Communis (Escherich).

"Found in the human feces, intestinal canal of most animals, in pus, and water.

"*Form.*—Short rods with very slow movement, often associated in little masses resembling the typhoid germ.

"*Properties.*—Does not liquefy gelatin, causes fermentation in saccharine solutions in the absence of oxygen, produces acid fermentation in milk.

"*Growth.*—On potato a thick, moist, yellow-colored growth. Very soon after inoculation on gelatin a growth similar to typhoid. It can also develop in carbolized gelatin, and withstands a temperature of 45° C. without its growth being destroyed.

"*Pathogenesis.*—Inoculated into rabbits or guinea-pigs, death follows in from one to three days, the symptoms being those of diarrhea and coma; after death tumefactions of Peyer's patches and other parts of the intestine; perforations into the peritoneal cavity, the blood containing a large number of germs.

* Essentials of Bacteriology, by M. V. Ball, M.D. Second edition.

"*Staining.*—Ordinary stains; does not take Gram.

"*Site.*—The bacillus has been found very constant in acute peritonitis and in cholera nostras. Its presence in water would indicate fecal contamination.

"The growth on potato, the effect on animals, and its action toward milk are points of difference from the typhoid bacillus."

We take this occasion to state that we have made no personal experiments as regards pathogenic and pyogenic properties of the *bacillus coli communis;* hence we shall quote *in extenso* from those who have made a special study of this organism and endeavor to show, by their experiments and arguments, the part played by this normal inhabitant of the intestinal canal in causing disease under varying circumstances.

Roswell Park,* in speaking of the *bacillus coli communis*, relates the following history concerning it: "It was first described in 1885 by Escherich, and was first regarded as a saprophyte and intestinal parasite. In 1887 Hueppe found it in the stools of a patient suffering from cholerine. Its positive pathogenic properties were first made known by Lauelle in 1889, then by Tavel, also by Rodet and Roux, who fully established its pyogenic properties." He goes on to say that it is a short, rod-shaped organism, its shape causing it to be generally known as the *bacillus coli communis*, which in the hanging drop is motile, its motility consisting in a sort of oscillation, and sometimes with a rapid translation. Its possession of flagella is disputed; at most, it does not have more than three of them, while the typhoid bacillus possesses from eight to twelve. It seems to enjoy a sort of commensalism, possibly even a symbosis. In the healthy intestinal canal it practically never exists alone, but it is found alone in other parts of the body under certain conditions. Ordinarily it is not virulent, but under certain circumstances its virulence varies within wide limits, as is shown when it is obtained from *cholera nostras*, and, inoc-

* "Surgical Importance of the Bacillus Coli Communis," Annals of Surgery, September, 1893.

ulated, it causes death from acute septic infection within twenty-four hours. When from intra-abdominal abscesses, it is only slightly infectious. We have to deal with this organism, then, under two conditions: first, as an exceedingly active agent, producing acute septic infection; second, as a common pyogenic organism, producing local abscess.

Pathogenic Action.—To show the pathogenic action of the colon bacillus we quote from a paper by Dr. Welch, of Baltimore, read before the Second Congress of American Physicians and Surgeons. He said:—

"Tavel's observations of the colon bacillus in connection with wound-infection were followed by a few isolated observations of this organism, either in the unchanged organs of the body or in suppurations, until recently. A. Fränkel reports its presence in 9 out of 31 cases of peritonitis. I first came across this bacillus in the organs of the body in 1889–90, in a case of multiple fat necrosis with pancreatitis, which I reported to the Association of Physicians. As in this case diphtheritic colitis existed, it seemed probable that the lesions in the intestine opened the way for the entrance into the circulation of this inhabitant of the healthy intestinal canal. This view subsequent experience has confirmed.

"I have almost uniformly failed to find it outside of the intestinal wound when no demonstrated lesion of the mucous membrane existed. I am, therefore, prepared to say that this bacillus is an extremely frequent invader in intestinal diseases. Moreover, the colon bacillus does not invade the blood and organs in the process of post-mortem decomposition.

"The cases in which we have found the colon bacillus under circumstances pointing to its pathogenic action have been as follows: Perforative peritonitis, 4 cases; peritonitis secondary to intestinal disease without perforation, 2 cases; circumscribed abscess, 3 cases; and laparotomy wounds, 6 cases.

"Its presence several times in pure culture, in laparotomy wounds treated aseptically, although apparently not a source of serious trouble, was not a matter of indifference. It was generally accompanied with moderate fever, and with a thin, brownish, slightly-purulent discharge, of somewhat offensive, but not putrefactive odor.

"The smooth and rapid healing of the wound was interfered with. In some of the cases there was evidence of intestinal disorder; in others this was not apparent, and infection from without could not be excluded.

"For the purpose of the present discussion, perhaps the chief interest of our observations concerning the colon bacillus is that they furnish illustration of the predisposition to infection afforded by *intestinal lesions*, and also give example of the much-disputed *auto-infection*."

Park, at the same meeting, spoke of enterosepsis in cases of abdominal surgery produced by this bacillus. He said that under some circumstances it either escapes or is carried beyond its normal limits, and, entering the portal circulation, perhaps the lymphatics as well, appears to set up septic disturbances which are typified by the production of septic peritonitis, and possibly other forms of septicemia in which the peritoneum does not primarily figure,—a condition which Drs. Welch and Councilman call *colon infection*.

We shall not attempt to do more than mention a few of the diseases in which the colon bacillus appears to be the most active agent. It has been known to manifest its presence in the following conditions:—

1. Infectious diarrhea.
2. Empyema (following enteritis).
3. Broncho-pneumonia.
4. Endocarditis.
5. Cystitis.
6. Nephritis and pyelonephritis (surgical kidney).
7. Disorders of the liver (icterus).
8. Appendicitis.
9. Periappendical abscess.
10. Perforative peritonitis (also in cases of lesions of that intestine without a perforation).
11. Laparotomy wounds.
12. Strangulated hernia (in fluid of).
13. Perirectal abscess, etc., etc.

A casual glance at the above diseases in which this germ is *known* to be an etiological factor is sufficient proof of its having pathogenic and pyogenic properties. Until quite recently it was supposed that this germ did not enter the circulation and

produce disease in distant parts unless there was a lesion of the intestinal mucosa. We are to-day taught by such excellent authorities as Welch, Park, Councilman, and others that the *bacillus coli communis* is capable of entering the circulation, whence it is carried, and does produce disturbances independent of any intestinal lesion. It is quite easy to understand the way in which it reaches and infects the genito-urinary tract and the liver. It is usually introduced into the urethra, bladder, and from thence to the kidneys through the ureters, by means of an unclean sound or other instruments. Some writers allege that the colon bacillus sometimes passes through the rectal wall and starts up a cystitis, when the mucous membrane is ready to receive it.

As to reaching the liver, this normal inhabitant of the intestinal canal has but to walk leisurely, as it were, up the intestine and through the door of the common bile-duct to gain access to her "Majesty's innermost chambers," causing an infection therein. It is remarkable that we do not see biliary infection more frequently than we do.

We wish now to pass to that portion of the subject which is of more especial concern to those who are interested in rectal and anal diseases. We have for a considerable time past inclined to the belief that the colon bacillus or some other bacteria, either alone or combined, directly or indirectly cause proctitis and periproctitis.

Proctitis, if allowed to run an uninterrupted course, almost invariably results in abscess, fistula, or a stricture, as the result of the lumen of the bowel being diminished by inflammatory deposits, or as a result of vicious cicatrization following ulceration. If future investigations prove that these intestinal bacteria are the starters of the inflammation and incidentally the sequel which follows, we shall, in all probability, have the explanation of the cause of a large percentage of strictures that are at present classified as being due to "unknown causes"; for they cannot be assigned to traumatism, syphilis, tuberculosis,

dysentery, etc. We have personally made no investigations to determine this fact, but hope to do so in the near future. For the present we shall have to base our remarks upon the facts brought out by men who have done original work along this line,—namely, Welch, Park, and Councilman.

In order to obtain the latest information relative to this important subject we wrote to Dr. Park, of Buffalo, and to Dr. Welch, of Baltimore, asking their opinions as to auto-infection, the part played by the colon bacillus in the same, and, if any, what part this bacillus plays in the causation or continuance of certain local diseases of the colon and rectum, such as proctitis, abscess, etc. We have misplaced the copy of this letter, otherwise it would appear along with the answers, which are so full of valuable information that we have deemed it best to record them without a single change. We take this opportunity to publicly thank both Dr. Welch and Dr. Park for the many valued suggestions contained therein.

DR. PARK'S REPLY.

BUFFALO, June 21, 1894.

DR. S. G. GANT, Ninth and Grand Ave., Kansas City, Mo.

DEAR DOCTOR: In reply to your favor of the 16th I would say that I send herewith one or two papers bearing on the subject of which you write, and that I must refer you also to a book published by me two years ago, entitled "Mutter Lectures on Surgical Pathology," in which I have devoted some little space to the matter of intestinal toxemia. This book was issued by J. H. Chambers & Co., of St. Louis. I regret that I have not a copy at hand which I could send you. The subject is to me one of very great importance, and I am glad that you are going to devote some attention to it in your forthcoming work.

I have no doubt that the colon bacillus does play an important rôle in diseases of the rectum and colon, but it is difficult to say under just what circumstances. In the light of the most recent investigations, it occurs to me that perhaps a little too much importance has been assigned to it as the sole factor in these troubles, and that many cases in which it is prominent are due to really a mixed infection by which the virulence of two or three different forms is very much increased. It is, however, considered to be identical with the *bacillus pyogenes fœtidus*,

which is a common organism in many cases of perirectal abscess. I have found them in various abscesses around the colon, higher up, and even on the right side, and of these I can say that at the time of opening, at least, the pus seemed to be pure culture of this organism. This is not true, however, of all cases, by any means, and it may be that in most of them some other organism has been present and has died out, for many of them are of considerable standing.

I have also, as reported in one of my papers, found pure cultures of *colon bacillus* in most cases of periappendical abscesses which I have thus investigated, and I do think that it is a most active factor in this kind of disturbance. I think the circumstances which most co-operate to make this organ virulent are the presence of certain putrefactive organisms combined with habitual constipation. Mere ulceration or abrasion of the mucosa, by itself, I think may predispose to virulence of effect of the organism, but such ulceration is not very likely to be brought about by the said causes which tend to make the organism more virulent.

In reply to your third query as to whether the bacillus can enter the circulation through sound membranes, there is every reason to think it can. Numerous investigators have found it under many circumstances, and I consider it settled that this is possible.

In reply to the fourth question, I think it is the case that the bacillus multiplies more abundantly when the stools are liquid, because such a condition furnishes a more suitable culture-medium for it, with a more lively distribution, but I really cannot tell which of the two conditions, diarrhea or constipation, is more likely to cause auto-infection.

In a general way I think that much depends upon the condition of the other eliminatory portions of the system. For instance, if there be oliguria, I think extra work is thrown upon the alimentary canal; and when to this is added the sluggishness of the skin in many anemic and debilitated individuals, I think everything conspires to make the condition of the intestinal canal worse and more active. I think also much depends upon dilatation of the stomach, which is often present, in at least more or less degree, and upon the perfection of disposition of the stomach-contents. The presence of lactic and of fatty acids has much to do, I am sure, with the trouble, and yet I certainly cannot tell you just how, nor do I know of any one who can.

Reasoning from the other direction, I am quite sure one gets valuable suggestions, if not exact knowledge, from the fact that the very best treatment, in my estimation, for operation, and especially for abdominal operations, consists largely of careful purging for several days before the operation itself. This is with reference not only to the *colon bacillus*, but to all the organisms which inhabit the intestinal canal. If one re-

members that the *colon bacillus* belongs primarily in the intestines, and that it is identical with other forms discovered by various observers, to which different rôles have been assigned, one will get a better idea of the possibilities and properties of this organism. I have no doubt there are pure types of colon infection which produce peritonitis (this is particularly the case with appendical trouble), but, as every surgeon knows, these cases are not invariably fatal, and many observations conspire to prove the benefit of clearing out the alimentary canal when this condition is in its incipiency or perhaps merely threatening.

I shall await the appearance of your forthcoming book with no little interest, and shall be very glad if in the slightest degree I have helped to call attention to this very important subject.

Very sincerely yours,

ROSWELL PARK.

(Dic. to steno.)

DR. WELCH'S REPLY.

935 ST. PAUL ST., BALTIMORE, June 26, 1894.

S. G. GANT, ESQ., M.D., Kansas City, Mo.

DEAR DOCTOR: My first observation of invasion of internal organs of the body by the *bacillus coli communis*—and, I believe, the first on record—was reported by me to the Association of American Physicians in 1889, I think. (I have not the reference at hand.) This was in a case of multiple fat necrosis associated with diphtheritic colitis. In the article referred to by you in the *Medical News* I gave the conclusion reached up to that time. I have no doubt that the *colon bacillus* is a frequent invader of the circulation and internal organs, particularly the lungs, kidney, and liver, in cases with lesions of the intestinal mucosa, and sometimes without such lesion being demonstrable. In the great majority of these cases, in which we are able to demonstrate by culture at autopsy the presence of the *colon bacillus* outside of the intestinal tract, there is no evidence that such invasion has produced any damage. Microscopical sections show *colon bacilli* often abundantly in the blood-vessels of the kidney, and often in parts without evidence of lesion of the surrounding parts. These facts, it seems to me, justify skepticism about referring to the *colon bacillus* as of great importance, as many nowadays do, even when it is present in inflammatory areas. One must consider whether, in such cases with actual lesion, it may not be a secondary invader in parts primarily diseased through some other agency, including other micro-organisms. I have, for example, found the *colon bacillus* in tuberculous pyelitis and in gonorrheal pyelitis. The primary micro-organism may have died out and the *colon bacillus*, which is a resistant micro-organism, may survive alone and keep up the inflammation. Still

there are, of course, observations which leave little doubt that the *colon bacillus* may exert definite pathogenic action. I contend, however, that not a few cases recorded in which disease has been attributed to the *colon bacillus* will not stand critical scrutiny in the light of all of the facts which are now known. In my paper on "Conditions Underlying the Infection of Wounds" ("Transactions of the Congress of American Physicians and Surgeons," vol. ii) I express myself with candor as to the pathogenic rôle of the *colon bacillus*. I am very skeptical about the prevalent view that the *colon bacillus* is the cause of appendicitis. Being a constant inhabitant of the intestine, it, of course, is present in the diseased as well as the normal appendix, but in the former case, in my experience, usually in association with unquestioned pyogenic bacteria. The same has been my experience in perforative peritonitis, contrary to that of some French and Italian observers. The *colon bacillus* is so widely prevalent, it is so easy to cultivate on all media and at all temperatures, that I cannot help suspecting that often other bacteria were overlooked.

As regards the relation of the *colon bacillus* to proctitis and periproctitis, I doubt very much whether it is capable of causing either of these diseases in healthy tissue. It is certainly found with great regularity in perirectal abscesses, usually, I think, in combination with other bacteria of proven pyogenic power, but sometimes in pure culture. In the latter case, however, I should suspect previous disease of the part from some other agent, although given this primary lesion the *colon bacillus* may be a factor of importance in producing and confirming the supposition.

As regards the general subject of auto-infection from the intestinal canal, of course, although the *colon bacillus* is the most common invader, other bacteria may likewise enter through this portal, notably the pyogenic micrococci. Definite lesions of the intestinal mucosa here too are important predisposing factors, as is illustrated in some cases of secondary infection in dysentery, typhoid fever, etc. As regards the predisposing influence to infection, which may be exerted by absorption of toxic substances, products of decomposition, etc., from the intestinal canal, it seems to me that we have very little definite information, although plenty of speculation.

The question of invasion of the *colon bacillus* and its pathogenic significance were considered by me in the "Middleton Goldsmith Lecture" before the Pathological Society of New York at the end of last April. The lecture has not been published, but will appear in the *New York Medical Journal* in the course of a couple of months. I must refer you to that for a fuller statement of my views on this subject.

Hoping that I may have touched upon some of the points on which you desired my views, I am,

Very truly yours,

WILLIAM H. WELCH.

This chapter has already reached a length far beyond our expectations. For this reason we will at once hasten on to the more important part of this subject,—that of treatment.

TREATMENT.

We shall not attempt a detailed discussion of the many remedies that have been suggested for the prevention and relief of auto-infection of intestinal origin, but will mention only the more salient features.

The treatment in a large measure should be prophylactic, and every effort should be put forward to keep the system in perfect order and the equilibrium maintained; so long as this is accomplished nature is capable of defending herself against any and all toxic substances generated within the body. Any disease or symptom of a disease that would predispose a patient to auto-intoxication from poisons normally generated within the body must be eradicated at once. As we look at it, there are three essential features that must be constantly borne in mind in the treatment of auto-infection.

1. We must remedy any condition which predisposes the patient to self-infection.

2. We must use every possible means to prevent the abnormal production and absorption of poisons within the intestinal canal.

3. We must do all we can to assist nature to neutralize and eliminate poisons already absorbed.

To accomplish the first we must correct any condition that will cause an erosion or that weakens the mucous membrane in any way, because it prepares the way for the entrance into the circulation of toxic substances within the intestine. Hence we must correct irritative discharges of all kinds; we must heal

ulcers and fissures; we must remove hemorrhoids, polypi, and other growths. In fact, we must first get rid of any local disease of the rectum and colon present, or all our efforts directed toward the prevention and relief of auto-infection will be of no avail.

There are some cases in which we can find no local cause; then we must look elsewhere, and in all probability the exciting cause of the infection will be found to be either a diarrhea or constipation and fecal impaction. When due to either, we would recommend a line of treatment previously laid down in the chapters devoted to these subjects. Whenever there is an irritant within the intestinal canal that promotes auto-infection, the safest plan is to give a vigorous cathartic, one of the mercurial if you choose, which will cause it to be expelled. Then we must institute a laxative tonic treatment, to be continued for a long or a short period, dependent upon the extent and continuation of the infection. Very often poisonous substances can be eliminated from the system by the constant and abundant use of reputable mineral waters known to have a cathartic action. Sometimes it will be necessary, in addition, to administer a pill composed of aloin, strychnine, and belladonna, which has stood the test of time, or one composed of the lactate of iron, extract of nux vomica, and purified aloes given three times a day. Perhaps the most striking example of the importance of cleansing the intestinal canal is to be observed after abdominal operations. All of us have seen the temperature of our patients suddenly rise two or three days after an operation. The wound being healthy, we are nonplused to account for the disturbance. We finally decide to give a cathartic, the bowel is cleansed of accumulated feces, and immediately the temperature becomes normal. In the treatment of auto-infection it is necessary to correct errors in diet, prohibit the use of alcoholic stimulants, and have our patients take only such foods as they can digest easily. If we were going to recommend any special diet we should select milk, for experience

has proven that it is opposed to all sources of intoxication and puts a check upon auto-infection due to intestinal putrefaction.

We now turn our attention to the second feature in the treatment, and endeavor to prevent the abnormal production and absorption of poisons. To accomplish this we must resort to the intestinal antiseptics, both local and systemic. Perhaps the best general antiseptics, either alone or in combination, are the iodides of potash and sodium. We have many times witnessed beneficial results from the continued use of these drugs in cases where the system was saturated with poisons. There are many medicines that are highly commended as intestinal antiseptics, such as iodine, creasote, benzoic acid, boric acid, salol, resorcin, turpentine, the mercurials, etc. Many of the above-named antiseptics undergo changes in their course through the alimentary canal, ere they reach the colon, which diminishes their activity. The best results are usually obtained from those insoluble drugs which remain unchanged throughout their course, such as salicylate of bismuth, salol, iodoform, and naphthalin. When the salicylic acid accumulates in the blood and threatens complications, the subnitrate of bismuth may be substituted for the salicylate. In giving these intestinal antiseptics it is not necessary that the dose should be sufficiently large to kill the bacteria, but large enough to render them dormant, as it were, thereby preventing their multiplication. We know of nothing better than the subnitrate of bismuth in combination with charcoal to neutralize poisons already formed and to prevent fermentation and putrefaction. We make up a powder containing ten grains of each, to be repeated at short intervals until there is evidence of relief, such as a diminution of tenderness over the abdomen and of tympanites. The bismuth seems to prevent the putrefactive fermentation, while the charcoal diminishes the toxins. Iodoform may be combined with charcoal or with naphthalin to accomplish the same purpose. To diminish the fecal odor as well as its toxicity, Bouchard combines seventy-five grains of naphthalin with an equal amount

of sugar made aromatic with one or two drops of bergamot. This mixture he divides into twenty powders and gives one every hour. In this way he claims putrefactions within the intestinal tube may be completely suppressed.

The last feature in the treatment consists in assisting nature to neutralize and eliminate poisons which have already entered the circulation. To accomplish this we must see that the eliminatory apparatus is in perfect order, for when any one of the emunctories gets out of order poisons immediately accumulate in such quantities that nature can neither neutralize nor eliminate them. The blood must be toned up by tonics, if necessary, the liver and the kidneys by medicines that will stimulate them to renewed activity, and the skin must be kept in order by frequent cold baths, followed by a brisk toweling. In addition to remedies directed for the perfection of the emunctories, we must see that patients suffering from auto-infection lead a simple, regular, active, occupied life, and do not mope about and brood over their afflictions.

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CHAPTER XXVI.

CANCER OF THE RECTUM: ITS ETIOLOGY, SYMPTOMS, VARIETIES, AND TREATMENT.

By Herbert William Allingham, F.R.C.S.Eng.

A careful consideration of the experiences of other surgeons, together with my own study in the hospital and private practice, has left me without any definite opinion as to the causes of cancer of the rectum. Opinions are so different, statistics are so contradictory, either in statement of fact or in argument therefrom, that it is impossible to state any dogmatic views as to the etiology of cancer in this portion of the body.

It may be and sometimes is hereditary, but even as to this statistics and surgeons disagree. Some surgeons strongly aver that it is hereditary, but many pages have been devoted to show the very small proportion of hereditary instances in private case-books or hospital records. There are very few families in which it has not occurred, but fewer still in which the parents or grandparents of the patients have any of them suffered from the disease. It may run in the family or in the collateral branches, as in uncle or aunt, brother or sister, and more frequently still in cousins; but that does not argue transmission by heredity in the direct line. Such being the case, all that can be safely said is that cancer is a malignant growth which may attack the anus, rectum, and other parts of the bowel, and thence spread to adjacent organs. When it assails the rectum it usually runs its course in about two years, though some patients last four months and others linger on for four and a half years. It is to be regretted that modern life seems rather to foster than to hinder the disease, for cases of cancer of the rectum are more numerous than they were early in the century. Perhaps, how-

ever, this arises from cases being more carefully diagnosed and more fully enumerated than was formerly the case. The difficulty of always distinguishing between malignant and innocent growths may have caused the proportion of cancer cases to appear somewhat larger at the present day, but we must remember the fallibility of the microscope and the danger of pronouncing one piece of growth innocent when its neighbors are malignant.

All periods of life are liable to cancer of the rectum, although it is said sometimes to be peculiarly common to middle age. We have met boys aged 17 and 13 years afflicted by the malady. Old people too are sometimes attacked, but they are usually subject to the slower forms and live long, for then the vital forces are sluggish. Women have been believed to be more subject to cancer than men; this may be true of the body as a whole, taking into account the liability of the breast and the uterus; but for the rectum and the large intestine statistics show that many more men than women are attacked by cancer. The records of St. Mark's hospital for two years show five-sevenths of male to two-sevenths of female rectal cancer cases. In the early stages some forms of cancer may be simply and purely local; but this stage is exceedingly brief, and the temporary local nature is scarcely true of the more malignant forms, —that is to say, as soon as a growth is so developed as to be noticed by the patient, the disease is constitutional in most cases.

After mentioning the *clinical* varieties of cancer of the rectum and bowels, we can collect the various opinions of pathologists and microscopists on the processes of the formation and growth of cancer. Not much, that is certain, will be stated, but students and operators may be able, the one to learn, the others to compare their own experiences. After this the sharply-marked kinds will be described, which alone are of practical importance to the surgeon.

According to the old nomenclature the various forms of malignant disease were termed epithelioma, scirrhus, several

kinds of sarcoma,—encephaloid, colloid, and melanoma,—but later investigations have resolved many of them under the head of *adenocarcinoma*, Mr. Cripps having devoted much microscopical study in his researches with these varieties. Indeed, the three forms—scirrhous, medullary, and colloid—are the varying conditions of one growth or a portion of that growth. This adenocarcinoma has by other writers (I refer to my late colleagues, Mr. Alfred Cooper and Mr. Swinford Edwards) been divided under three heads,—the laminar, the tuberous, and the annular. The *laminar form* is the most common and the intestinal wall is infiltrated or thickened, the thickening occurring between the muscular and the mucous coats and spreading laterally. The surface of the growth gives way after a time, and leaves behind a ragged ulcer. The disease usually begins in the centre and eats its way outward. Sometimes the deposit is only partially destroyed by the ulceration, and its remains form tumors which enter the cavity of the bowels. At other times the coats of the bowels are destroyed and the neighboring organs are perforated.

In the *tuberous form* the growth projects into the bowels. The mucous membrane is soon destroyed by the ulceration, and some of the growth projects through the opening thus made. The cancer has outgrowths and attacks the neighboring tissues and structure.

In the *annular form* the growth commences as a deposit between the mucous and muscular coats and ascends laterally, finally entering the entire circumference of the bowel. Hence, by subsequent contraction the calibre of the bowel is reduced and severe stricture is caused.

Cancer of the rectum may also be classed under five heads, which include several distinctive features:—

1. There is a variety like a growth, often the size of a five-shilling piece, situated at the lower part of the rectum. To the feel it appears to have a pedicle, but in reality that sensation arises from its dragging upon the mucous membrane.

2. The second variety resembles the first in its position, thus showing that it is not a growth out of the bowel, but an ulcer or depression surrounded by irregular, nodular edges. It is movable and as large as the first. It is generally confined to the lower part of the rectum, and healthy gut can be felt above it.

3. A third kind is to be found in the lower inches of the rectum. Indeed, it combines the peculiarities of the two previous kinds; all around the gut there are irregular nodules interspersed in the area of depressed ulcerations. It is not fixed to the deeper structures and is therefore movable.

4. The fourth kind is found higher up in the bowel and is a hard growth combined with ulcerations. It both involves the gut and inclines to the surrounding tissues. It is, therefore, rarely at all movable. Its starting-point is about three inches up in the rectum, but its upper limit is not easy to discover.

5. A fifth variety begins even higher up in the bowel—say, about four or five inches (10 or 12 centimetres)—and is, as a rule, a very hard growth which involves the circumference of the bowel. It is extremely movable and intussuscepts into the lower part of the rectum. Its feel resembles that of the neck and mouth of the uterus in the vagina.

Symptoms.

The many and various symptoms of malignant diseases of the rectum are of supreme importance to the surgeon in making his diagnosis, and a wide experience has shown that some of them are practically certain signs of cancer. Such is the *waxen aspect* of the countenance, which appears in cancer of the rectum even earlier than it does in malignant diseases in other parts. But it must be remarked that in some patients the appearances of vigorous health are maintained until the malady is already in full activity. Another sure sign is the *peculiar odor*, which the experienced cannot fail to recognize; this is essentially indicative of cancer. Very slight disorders mark the

beginnings of the disease,—viz., uneasiness in the bowel or *slight morning diarrhea*. The patient goes to stool frequently and passes *jelly-like excretions*, which are not true matters, but are merely the mucus and other matter passing from the growth. Another symptom is that it is difficult to pass matter *without a motion following*. The *pain* arising from cancer of the rectum is, as a rule, most intense and is enhanced by the daily functions of that part, but sometimes in the early stages the pain is not very severe. In the more advanced stages the suffering is often unremitting, for many nerves are involved by the growth and are pressed upon or stretched; thus the neighboring organs become seats of separate pain, though they may not be actually touched by the growth. One patient had a cancer which, commencing in the rectum, involved the whole cavity of the pelvis and caused most severe pain down the *right* sciatic nerve. *Violent straining* is one of the most distressing symptoms. The cancerous mass, especially when nearing the anus, provokes reflex action and causes irresistible *bearing down*. When the surgeon turns to tactile examination the feel of cancer to the finger is pathognomonic and cannot be mistaken by the practiced surgeon for simple ulceration. For the diagnosis of rectal cancer the *microscope* cannot be entirely depended upon any more than it can for malignant growths in other parts of the body, as the larynx; for, as has been often remarked, the portion of the growth removed and examined may be innocent, while the neighboring portions may be emphatically malignant. The symptoms and position having been noted and a correct diagnosis having been arrived at, the point is the proper treatment to pursue, whether for the alleviation of pain or for the saving of life.

Treatment.

Palliative.—It must be understood that palliative treatment is to be employed only in cases where removal by excision is quite out of the question or in those cases not yet sufficiently bad to require colotomy. The protrusion of a

cancerous mass (which is somewhat of a rarity) may be usually stopped and the pain relieved by the application of *arsenite of copper with mucilage as a paste.* There is no hemorrhage or danger whatsoever. In most cases the palliative treatment can merely be devoted to the alleviation of pain,—viz., *recumbent posture*, food easily digested, *nourishing diet*, with a moderate amount of alcohol. All sorts of *sedatives* may be beneficially employed, either externally or internally, and *when one ceases to be of service another may be tried instead. Opium* in one or other of its forms is the best; if applied as a suppository the most effective formula is morphia with glycerin and gelatin (three parts of glycerin to one of gelatin), for this melts speedily and feels less like a foreign body than suppositories of cocabutter. Suitable *injections* are Battley's sedative and nepenthe, or black drop, in starch. Much good is done by solid opium by the mouth, but the stomach becomes irritated, there is a loss of appetite, and the bowels are confined. Hypodermatic injection of *morphine* gives much comfort, but the mental state caused by the constant use of morphine becomes almost as unbearable as the cancerous pain itself, and I am strongly of the opinion that the greatest care should be taken to administer no larger doses than are absolutely necessary, for the treatment, to be effective, may have to be continued for months. Mr. John Clay, of Birmingham, used to advocate the use of Chian turpentine, but it has been found to be of little service. In very few cases were the symptoms mitigated, and in the rest the effects were nausea and frequent derangement of the appetite and the functions of the stomach. Such treatment failing, *mild operative measures* are the best to be resorted to. Division of the sphincter muscle is of service when the growth approaches the anus, for the defection is made easier and there is no possibility of compression as noted above. Cancer of the upper part of the rectum, through its pressure on the nerves, inhibits the action of the sphincter and prevents patients from retaining the motions, especially if they are at all liquid. For diminution of

the calibre of the bowel, Professor Verneuil used to advise *free division of the gut in the dorso-median line.* I have found this of service, but do not recommend his alternative proposal of excision of a segment of the posterior wall of the rectum. In encephaloid of the rectum much temporary advantage is gained and great mitigation of the pain procured by *tearing out the growth with the fingers or a scoop*, the fingers being preferable. Boldness is necessary, and the whole growth must be torn from its nucleus quickly and resolutely. If only superficial portions are torn away, the patient may have an exhausting hemorrhage and will receive no benefit. I have found this plan of much avail in cases where colotomy was not advisable, but only because no great loss of blood need be caused. Sometimes when the growth has been hard I have taken it away with a Volkmann spoon. This is of advantage when the growth is within reach, for the scooping away allows the passage of the motions, and with patients who have objected to colotomy I have, by this means, prevented total obstruction. The methods to alleviate the pain from cancer of the rectum and to stave off death, perhaps (?) to cure the disease itself, are *excisions of the desired portion* and one or other of the forms of *colotomy.* I will reserve the subject of colotomy for another chapter, and will now turn to *excision* of the rectum.

Excision of the Rectum.—It is not my intention to enter into the operation of excision of the rectum, or to describe the various ways in which it may be performed; but the reader who wishes the fullest information on these subjects may be referred to the able and exhaustive work of Dr. Marchand, entitled "Étude sur l'extirpation de l'extrémité inférieur du Rectum." I will only here mention that Faget, in the year 1739, excised the rectum for cancer, that after this the operation remained in abeyance until 1828, when it was revived by Lisfranc, who performed it in several cases with success. At a comparatively recent date it has been frequently undertaken by both French and German surgeons, and with such good

results as to establish the operation on a reliable basis. The Americans and ourselves have brought up the rear; possibly we are more cautious and have had our doubts as to the great benefits claimed for it by our foreign *confrères*. Certainly we are justified in distrusting such statements as that of Dieffenbach, who said he had thirty cases of successful extirpation of the rectum, the patients living many years after the operation. We have also felt incredulous as to the advantage derived from cutting out the rectum, a portion of the urethra, prostate gland, and base of the bladder, as did Nussbaum, who gravely assures us that the patient recovered all his functions and lived for three years. Lately a method has been suggested in which the rectum may be excised from a posterior incision combined with the usual ones. Excision of the rectum (as it is frequently termed), broadly speaking, may be undertaken in any form of cancer which does not necessitate the removal of more than four and three-fourths or five inches (12 or 12.7 centimetres) of the rectum in the male and about one inch (2.54 centimetres) less in the female. Subject to the results of increased experience, I should also say that if great adhesions are formed to the sacrum or to the base of the bladder and prostate gland, or to the neck of the uterus in women, the operation is probably not admissible, and certainly not desirable. Again, if any enlarged glands exist in the inguinal or lumbar regions the operation cannot be recommended. Lastly, the patient ought not to be so exhausted as to render it doubtful whether the necessarily rather free loss of blood would, to a great degree, endanger life.

The first condition is the *patient's age*. 1. In those under 40 years of age the prognosis as regards recurrence after excision is bad, for the growths, being very rapid and of an infiltrating nature, are likely to return soon or recur in the excision wound before it has even healed. 2. Between the ages of 40 and 60 the cancer is less common and of less rapid recurrence after excision, but still that period of life is not wholly favorable

as regards early recurrence. 3. For patients above 60 excision is advantageous and the after-results are satisfactory, for the growth is, as a rule, hard and retracting and has slighter tendencies to recurrence.

In the varieties of cancer described on pages 293 and 294 as 1, 2, and 3, when the upper limit of the growth or ulceration can be reached and it is movable, excision is advisable; but if the growth is at all adherent the disease will certainly recur rapidly, more especially so the younger the patient is. Therefore, in young subjects and those about 40, excision should not be performed. In suitable cases the excision should be very free and, when possible, the whole of the circumference of the rectum should not be removed, for, if a piece of the gut can be left, it prevents the troublesome after-contraction which occurs when the whole circumference of the bowel is removed. In variety 4 excision is altogether out of the question, for, as the growth does not begin until several inches above the anus, the operation is necessarily very severe, and, as the growth is somewhat fixed, it is difficult to insure its complete removal. In variety 5, if the patient is willing and thoroughly understands the danger of the operation, inguinal colotomy should first be performed and followed later by Kraske's method of excision.

In doubtful cases the following points should be the surgeon's guide: The amount of adhesion to the deep structures should be taken into consideration. If the growth is situated near to the prostate or bladder, excision should not be done; but with a dorsal situation of cancer the operation may be attempted. The method of entire excision formerly employed by me was that which has found most favor with the French authorities. The deep dorsal incision I really consider the "key" to the operation. It gives plenty of room, which is essential if one has to remove any considerable length of the rectum, and so get fully above the growth. Further, it saves much loss of blood, as it enables one to secure the vessels, if necessary, with rapidity and certainty. Lastly, it forms a

deep drain or channel through which all obnoxious matters can freely escape. It is the retention of morbific particles which is dangerous; let them all run away as they are generated, and we may defy pyemia without any antiseptics. In saying this I am not insensible to the advantage of these chemicals when one cannot get deep drainage. In operating on the male always have a silver catheter passed into the bladder; the assistant hooks it well up under the pubic arch; the urethra and adjoining parts are thus steadied, and it is possible to carry on delicate dissections without danger in the neighborhood of the urethra, the prostate, and the trigone of the bladder. By the following method the rectum is most easily and rapidly excised: The patient being in the lithotomy position, a modification of the posterior dorsal incision of Prof. Verneuil should be made. The usual way is, on the finger to pass a bistoury into the rectum as far as the upper limit of the growth, and then to cut right down into the sacrum and tip of the coccyx, dividing the entire bowel dorsally. The first finger of the left hand is then put into the bowel and a sharp-pointed bistoury is introduced through the skin a little below the anus, making it travel in the cellular tissue up to the top of the growth, but entirely outside of the rectal tube. Then cut down to the sacrum and coccyx, and put a sponge into the incision to arrest bleeding. (See Fig. 79.) Next, with a scalpel cut deeply all around the rectum, above the external sphincter attached to the skin. Then divide the external sphincter posteriorly. Do this when it is possible; *i.e.*, when the growth does not come too low down. Now, with the finger in the rectum and the thumb in the cut between the sphincters, put one blade of a pair of long, blunt-pointed scissors into the posterior cut and push the other blade into the cellular tissue of the ischio-rectal fossa. After this, cut through all the cellular tissue between the blades, and repeat this proceeding on the other side, keeping the finger of the left hand in the rectum while the left side is being incised, and the first finger of the right hand while the right side is being cut. Of

course, to manage this properly you must be ambidextrous. Then introduce sponges into the incisions on each side of the bowel and separate the outer parts from the bowel by broad, flat retractors. (See Fig. 80.) Bleeding is then prevented and you need not stop to clip the vessels. Next, turn to the perineal part. With the finger still in the bowel and the thumb outside it you can tell, by the amount of the wall of the gut between finger and thumb, how near to the rectum you are cutting. If the scissors is kept cutting on the thumb-nail, and the rectum is drawn backward while you are cutting (see Fig. 81), there is

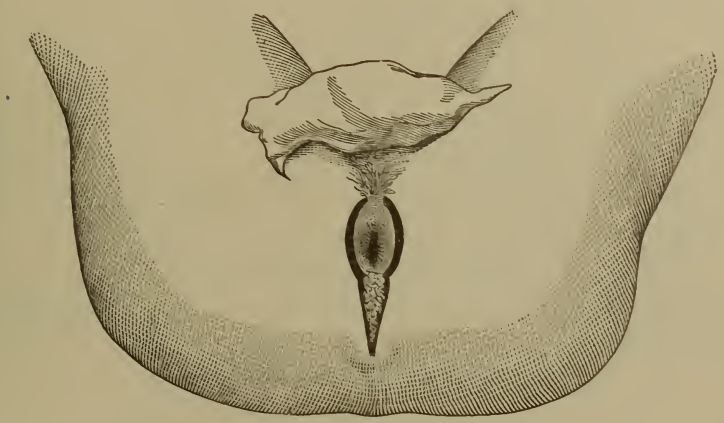

Fig. 79.—Herbert Allingham's Method of Excision of Rectum.

no danger of wounding the urethra or bladder, or of incising the bowel. When all the rectum is separated from the tissues around to one inch (2.54 centimetres) or more above the growth, the sponges may be taken out. On to the rectum, now freed, above the growth apply a large pair of Spencer Wells's rectangular pressure-forceps, one on one side and one on the other side of the gut. When the rectum is removed on the distal side of the clips a stout ligature is passed beyond the rectangular part of the clip and is tightly tied as the clip is slowly slackened. The same is done with the other clip. This secures any large superior hemorrhoidal vessel that there may

be in the cut end of the gut. There is generally little bleeding, because the inferior hemorrhoidal vessels and any others running across the ischio-rectal spaces of the rectum are small, and soon retract and contract. They may be easily made to do so by sponging the wound with equal parts of very hot water and spirit. The only large vessels that may be divided are the superior hemorrhoidal, which are situated in the rectal walls. It is well, before cutting the lower part off, to secure the upper part with the clip, as it might otherwise slip out of reach and bleed freely. By these means the rectum may be removed in

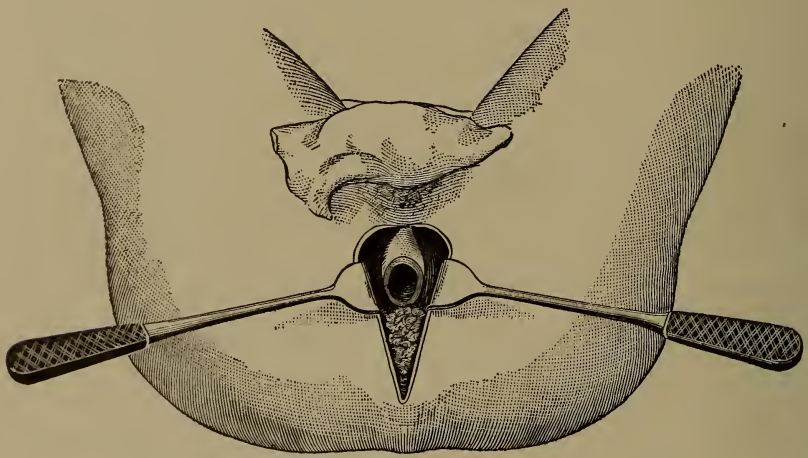

Fig. 80.—Herbert Allingham's Method of Excision of Rectum.

ten minutes with the greatest ease. There are a few important points to be observed in this method of excision:—

1. Little hemorrhage is to be feared if the above details are attended to, and, the more quickly you operate, the less bleeding there is. If an hour be taken in excising the rectum much blood is necessarily lost by your wasting time to pick up vessels which will stop bleeding of their own accord if left alone or subjected to a little pressure.

2. By not dividing the bowel itself when making the dorsal incision you can, by means of the finger in the gut, which is still a tube, and by the thumb, which is outside the

rectal wall, easily tell where you are cutting. Greater speed is thus insured.

3. By leaving the external sphincter, when it is possible, in the outer skin, sphincter power is retained after the operation, whereas if the external sphincter is removed with the gut no retentive control can be exercised. Several patients upon whom I have operated in this manner have had good control over their motions.

4. Blunt-pointed scissors are used in the greater part of

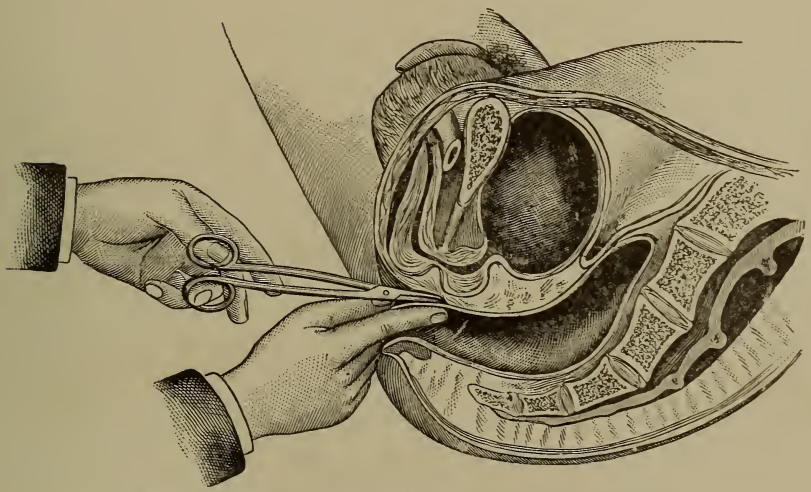

Fig. 81.—Herbert Allingham's Method of Excision of Rectum.

the operation, as one can cut with them with more precision and greater rapidity.

5. In women the assistant's finger ought to be introduced into the vagina to give timely warning when you approach too near its mucous membrane.

In most of my cases it was absolutely impossible to bring down the stump of the rectum to the skin; if, indeed, these parts could be brought together the tension would be so great that the sutures would be torn out in a few hours. It is hard to understand how Volkmann brings the rectum to the skin, puts in sutures, and gets primary union.

I have never used carbolic dressings with the view of following Sir Joseph Lister in his antiseptic treatment; in fact, these operations appear to me to be about the very last to which the process, valuable as it undoubtedly is in some cases, is applicable. Looking at the chasm I make and the part in which it is made, to shut up the cavity by sutures and then endeavor to keep that cavity sweet and healthy by drainage-tubes and deeper tubes put through holes made by the surgeon would be making a plaything of antiseptic surgery. How can one prevent fecal matter from getting into the wound, so incompletely closed as it must be by sutures? Perhaps it may be said that the bowels must be kept confined for days after the operation. To this the answer is that it is often impossible to do so. The intestines of these patients are always in an irritable condition, and neither opium nor any other drug will delay action for long. Then, again, it is not good to confine the bowels, for, should a large mass form in the upper part of the rectum, such pressure on the vessels is exerted that congestion and stasis are induced, and these conditions are quite inimical to the healing process. The best after-treatment of these cases is to establish a good drainage from the wound and to keep the parts clean by syringing with some disinfectant; and if you accomplish this you need not fear, for the wound will rapidly fill up and the rectum will grow downward and unite with the skin.

A modification of excision which has been freely discussed of late years is Kraske's method, which has found some favor with German surgeons and has itself been modified in detail. I have used it on several occasions. With the patient placed on his side, an incision is made in the median line through the soft parts of the back, extending from the second sacral vertebra to the anus. The muscular attachments to the sacrum are then divided as far as the edge of the bone on the left side. The coccyx is next excised, the sacro-sciatic ligaments are divided as near as possible to the sacrum itself, and the left edge of the wound is drawn aside. By chiseling away the lower part of

the left side of the sacrum easier access is obtained to the upper part of the rectum. Thus additional room is made by dividing the bone in a line starting on the left edge at the level of the third posterior sacral foramen and passing in a curve concave to the left, through the lower border. The chisel is next turned through the fourth foramen to the lower corner of the sacrum on the left. The rectum is then in sight and can be excised up to its junction with the sigmoid flexure. Further, if desirable, the upper part of the rectum can be excised, the lower portion being left intact.

Dr. Rehn, of Frankfort, begins his modification by an osteoplastic resection on the left side of the sacrum. An incision is made, and the bone is divided transversely between the third and fourth foramina, the flap of the bone, etc., being put aside to the right. Ample room to work in is thus obtained, and the surgeon can remove the growth from above and behind. Within ten days, if there is still insufficient defecation, the intestine may be incised above the stricture. The gut is then pulled down and joined to the lower portion. Further modifications have been devised by American surgeons.

After-Treatment of Excision of the Rectum.—The vessels being secured and the parts thoroughly sponged with hot spirit and water, the finger is inserted into the end of the bowel, there being always sufficient room between the stout ligature put on to the stump of the bone above the rectangular Spencer Wells clips. A long strip of wool is then passed along the finger into the bowel. This prevents any blood escaping into the intestines should there be any after-hemorrhage. The large cavity from which the rectum was removed is then well stuffed with some antiseptic wool, and a **T**-bandage is tightly applied so as to exert pressure upon the wool which plugs the cavity. The patient, after the operation, suffers, as a rule, some considerable shock, and requires careful attention and administration of stimulants. If the shock be very severe it may be advisable to transfuse three or four pints of warm saline solution. The

next day the greater part of the wool is removed, the parts being kept moist with some antiseptic solution. Day by day more of the wool is removed, the piece of the bowel being pulled out not later than the fourth day. On this fourth day a good dose of castor-oil is given and the bowels are made to act freely, and are then kept acting every other day. The wound should be dressed gently, night and morning, with iodoform or any other ointment which may appear to be suitable for the wound, according to its condition. When, in some weeks' time, the parts are mainly healed, the finger must be passed night and morning, or, if necessary, a bougie may be inserted and allowed to remain in the rectum a few minutes at a time. As a rule, after the parts are healed it is necessary for the patient to pass the bougie occasionally,—say, every other day or once a week for several months.

Recapitulation.

It will be gathered from the foregoing pages that I am not very strongly in favor of the operation of excision of the rectum. I have come to this conclusion from the observation of the very large number of cases of cancer of the rectum which I have seen, and from the results of about seventy cases of excision which I have done. It is seldom one sees a really favorable case for excision. It is perfectly useless to excise the rectum when the growth is high up in the bowel or at all fixed to the surrounding deeper parts. Again, I have noticed that excision of the rectum, or even of parts of the rectum, in the younger subjects, ends—though the case be most favorable for the operation—in an early recurrence of the growth. The only cases which appear to give any satisfactory results are in old subjects, where the local conditions are most favorable to the success of the operation. In several cases the patients have remained free from any recurrence of the growth for as many as ten years. Old people appear to stand the operation very well, and it is, therefore, well worth performing when the case

PLATE XVI-TYPICAL CASE OF FIBROSARCOMA WITH MULTIPLE FISTULAS
INVOLVING THE RECTUM AND ANUS OPERATED ON BY THE AUTHOR AT HIS CLINIC

is a suitable one. With regard to the question of partial or even complete excision of the rectum, whenever it is possible I leave a healthy strip of mucous membrane, for when it is necessary to excise the entire circumference of the gut it is usually followed by most troublesome after-contraction. So bad is this, and so much worry does it cause at times, that in some of my cases it has been advisable to perform inguinal colotomy and allow the rectum to close. This contraction can only be avoided by having such a strip of mucous membrane, which acts as an elastic splice and allows of easy dilatation. On several occasions I have combined excision of the rectum with colotomy. In some cases I have excised the rectum first, and then followed it some weeks later by colotomy, and afterward excised the rectum. In the former of these combinations I have, as a rule, performed the colotomy because the rectum has shown, during the process of healing, such a tendency to troublesome contraction. In the second class I have excised the growth subsequent to the colotomy because I found that excision was now possible; whereas, prior to the colotomy, when the growth was imbedded by feces, I had not thought excision either possible or justifiable.

Though I have made use of these combinations, I do not think, if the growth is likely to recur, it will be hindered from so doing by a preliminary or by a subsequent colotomy.

In spite of all my plain speaking with regard to excisions, I should like it to be borne in mind that, if there is any question as to the innocence or malignancy of the growth, it should be *presumed* to be innocent, and, therefore, not be excised, even though it be extensive.

CHAPTER XXVII.

COLOTOMY.

By Herbert William Allingham, F.R.C.S.Eng.

I intend to set forth as plainly as possible the advantages and the disadvantages of colotomy as a whole; to show the good points or the demerits of the main forms of colotomy,—namely, left lumbar, right lumbar, left inguinal, right inguinal, and transverse,—and to indicate when each one of these respective operations can be employed with the most beneficial results. It has been thought wise to enumerate all these five methods, but for the next few pages, and, indeed, during the greater part of the chapter, left inguinal and left lumbar colotomy will form the main topic of discussion. The transverse method will be described in its place; but as it is rarely used, it cannot yet be said to compete in importance with the inguinal and lumbar modes.

No doubt there may be a tendency for the advocates of the inguinal method slightly to urge its advantages over the lumbar mode, but I am confident they would not assert that lumbar colotomy should never be resorted to. In this they do not follow the example of those veteran surgeons who confine themselves to praise of the older method, and who altogether ignore the advantages of inguinal colotomy, an operation which, according to their own writings, they have rarely or never performed. Inguinal and lumbar colotomy alike would suffer from such biased opinions, and some surgeons might be dissuaded from trying both operations, and would thus be unable to judge which was the better to perform in the different circumstances arising in the course of their practice.

Now that inguinal colotomy has been fairly and freely tried, we are in a position justly to compare it with the lumbar method. An endeavor may be made to assign to the two operations their due rank in surgery, and to insure their employment on the most fitting occasions. If this attempt be successful, the full value of each operation will be brought out, and we shall desist from that old plan of using always the one or always the other, under which in certain conditions the method neglected was safe and proper, and the mode actually employed was dangerous and wrong.

These remarks as to the injuriousness of bias with regard to any particular form of colotomy apply as strongly to the old prejudice against the operation in general. Formerly colotomy was regarded as an extreme measure, which was only to be employed in cases where the patient was nearly bursting from distension. It was considered to be dangerous and rash, though the danger resulted mainly from faulty modes of operating and from the slighter attention to antiseptic precautions than is paid nowadays. The making of an artificial anus was held to be a nauseating device, and I have heard medical men tell their patients that they themselves would rather die in the utmost agony than have colotomy done to them. Such remarks are positively wicked and absurd, and probably proceed from men who have rarely seen the operation performed, and who know nothing of the suffering which it saves and the relief which it gives. Views of this kind must have been handed down by tradition from professional ancestors, who were as ignorant as the present holders of such opinions. Men of this stamp cherished the same antipathy to ovariotomy in the early days of that operation, and deterred their patients from undergoing it. But such futile prejudices have been swept away by the energy and ardor of later surgeons, and the old notions against colotomy are sharing the same fate.

A survival of these ideas is the postponement of colotomy to the last possible moment. But we have now come to see

that it is our duty not only to snatch patients from a distressful death, but also to relieve pain and discomfort in the earlier stages of their maladies, so that their remaining days may be made as peaceable as possible, and that death, when it does arrive, may come to pass with comparative ease.

I trust I shall not be charged with saying that every patient with cancer, or with ulceration combined with stricture, is, as soon as he is seen, when the malady is in an early stage, to undergo colotomy there and then. That would be as false and harmful treatment as to put off operating till obstruction had almost caused death. Such cases should be carefully treated by opiates, etc., and should be attentively watched. As soon as it is found that the patient is beginning to suffer from incessant diarrhea, from profuse bleeding, or from great pain, which cannot be remedied by medicine, we may then fairly ask whether life cannot be made less wretched, and whether colotomy is not best suited for that purpose.

When the patient is in such a state of suffering his medical attendant should explain to him how matters really stand. If he be a victim of cancer he should be told that he has an incurable disease which will grow, and that he may expect an increase of his discomfort, whether it be persistent diarrhea, bleeding, or pain. He may then be informed that his trouble will probably be relieved by colotomy; but he must also be made to understand what colotomy means,—viz., that the motions will always pass by the artificial opening. All questions asked should be faithfully answered, and the medical adviser should state what choice he would make and what he would have done to him if he were placed in similar circumstances. Strongly to urge colotomy without fully explaining its meaning is obviously as wrong and unfair as the prejudiced advice not to undergo colotomy. Inveterate habit and ingrained ignorance may still sometimes prevent the performance of colotomy when it is really needed, but its advantages are constantly becoming more generally recognized. A careful consideration of the

condition of the patient is the first requisite, and then, when we have put away all preconceived notions, we shall be able to see whether colotomy is advisable or not, and shall be able to determine what method is best adapted to the particular case.

The Conditions Necessitating Colotomy, and the Choice of Operation.

We must now consider what are the conditions which call for one or other of the operations of colotomy,—namely, left inguinal, left lumbar, transverse, right lumbar, or right inguinal. I have already described the various kinds of cancer in the rectum, but it is necessary to state the position it may occupy in the other parts of the large intestine. In the sigmoid, descending, transverse, and ascending colons cancer is generally an annular, scirrhus-like growth, which gives rise to narrowing of the gut. Occasionally in any one of these positions the disease may be an extension of a cancer in one of the neighboring organs, which, by its growth, pressure, or contractions, may narrow the colon in any of its segments. Putting aside the rectum, the most common places for these annular strictures and pressure-growths are at the sigmoid, splenic, and hepatic flexures, the order given representing the degree of frequency.

Narrowing of the gut may also follow from tubercular ulceration, syphilitic ulceration, or dysenteric scars or ulcers, with stricture. In the sigmoid flexure there may be traumatic or inflammatory conditions due to pressure upon the sigmoid intestine by the child's head during labor, or to adhesions or contractions which result from neighboring inflammation or abscesses. It is obvious that inflammations or contractions in the vicinity may similarly cause inflammatory conditions in any part of the colon. Last of all, there may be some congenital narrowing of the gut, necessitating colotomy either in early or in later life. But these states are rare and need not occupy space in this work.

The question at once arises: When is colotomy called for?

The commencement of *obstruction* is the first point to be discussed. When the rectum is involved and an obstruction is felt and begins to be complete it is needless to waste time by waiting. The administration of oil, injections, and so forth, is of no practical use, for they give but temporary relief, and the patient will be sure to have to undergo the operation later on, probably under much more adverse circumstances, when he is worn out and exhausted by distension. In such rectal cases, therefore, it is far better to perform colotomy as soon as the first definite symptoms of obstruction become manifest.

In other parts of the large intestine it is not wise to perform colotomy immediately, for there is no absolute certainty as to the nature of the obstruction, which may be only fecal, and its position is often very difficult to diagnose. In these cases, then, abstinence from solid food, administration of belladonna, etc., should be first tried, and if they fail to give relief colotomy may be resorted to. If the first attack of obstruction is relieved, and its nature and position are doubtful, colotomy should not be done till after repeated attacks of slight obstruction.

A few words further as to the seat of the obstruction. When the growth or stricture is situated within the rectum it can be felt, and a rapid decision can be made as to the time for performing colotomy; and if the stricture be innocent it can be determined what other line of treatment is best to pursue,—*e.g.*, the use of bougies, division, and so forth. But when the obstruction is in any other part of the large gut, unless a mass can be felt, it is extremely difficult to tell what portion of the intestine is affected. It is then that, from fear of performing colotomy too early, it is advisable for the surgeon to wait until fairly definite symptoms are manifested of an obstruction which cannot be relieved by drugs.

Pain is the next topic of importance.

Some of the cancers of the rectum give intense pain, for the motions may pass over an angry, ulcerated surface, or into a crater-like mass in which a portion of them may become

lodged. When the motions pass over the growth they incite a strong desire constantly to go to stool, and the incessant straining gives rise to pain. Here colotomy is wanted to allay such suffering.

Cases of ulceration with stricture of the rectum are frequently combined with very large and extensive fistulas, which spread from the ulceration in the rectum out into the buttocks. These fistulas are often very numerous, and when feces and flatus pass through them the pain is extremely severe. For the relief of this, and for the prolongation of a life which may be made better worth living, colotomy is demanded.

When proceeding from annular cancerous strictures in other parts of the colon, pain presents great variability. In some cases there is little or none till obstruction has become almost complete. In other instances it may be frequent, of a colicky nature, and spasmodic. The patient may then be able to state with approximate accuracy where the pain is, and thus lead the surgeon to discover the seat of the obstruction and the most appropriate mode of colotomy.

Sometimes the upper parts of the colon are attacked by ulceration with its accompanying contraction, and many inches of the intestine are involved. The pain resembles that given by cancerous stricture, being often colicky, and occurring repeatedly, but it is not usually severe till obstruction, too, has become a marked symptom. Thus the two conditions become united, and conjointly require operation. I must observe that for pain alone in the higher parts of the colon colotomy is seldom needed.

Bleeding is another state that may necessitate consideration. This is especially the case with a soft growth in the rectum, which is very vascular, and may be torn by the constant passage of feces over it. The resulting hemorrhage may then be very severe and dangerous, and if injections of astringents have failed colotomy may be necessary to save life. Bleeding rarely occurs to any alarming extent with tubercular,

syphilitic, or dysenteric ulcerations, and in these conditions seldom calls for operative interference.

The last state which may warrant colotomy is *diarrhea*. This is notably the case when there is cancer of the lower part of the sigmoid flexure and upper part of the rectum, or when there is syphilitic or tubercular ulceration not only of the lower, but also of the upper, parts of the large intestine. This diarrhea may be most intense, and may occur as frequently as twenty times a day, greatly distressing the patient, making his life absolutely miserable, and wearing him to death. When ulcerations from tuberculosis, dysentery, or syphilis cannot be treated successfully by mild remedies, colotomy, by cutting off the passage of the feces, allows the ulcerations to heal; and by the immediate stoppage of the incessant diarrhea, the patients are restored to a better state of health. Of course, in order to bring this about, the colotomy must be well above the diseased portion of the gut.

It must be borne in mind that though we have considered all these conditions separately, as a matter of fact they are generally combined, and then more urgently call for colotomy. Cancer or stricture of the rectum or colon often demands colotomy when obstruction is the only symptom; but there are cases when this obstruction is the smallest symptom, and when the patient with cancer of the rectum is far more seriously troubled in other ways,—viz., he is in constant pain from motions passing over the growth, he has great tenesmus, he is terribly distressed by having to go to stool over and over again, night and day, and, further, he incessantly passes blood mixed with slime. This combination of symptoms may occur in cases of cancer or of syphilitic or tubercular ulceration in the higher parts of the colon; but, as a rule, obstruction is the main symptom when the disease is in the upper part of the gut, and these conditions of pain, bleeding, and diarrhea are not so well marked.

Colotomy is even more necessary in tubercular or syphilitic conditions, when mild treatment has failed and the patients are

running down-hill, than it is in cases of cancer. Cancer is a mortal disease, and the sufferer's term of life will not be long. These other conditions are not necessarily fatal, and, if the distressing symptoms are relieved and the passage of feces is cut off, the rest from pain and irritation may allow the diseased parts to heal and the patient be enabled to live to a good age. The older school may dispute these views in consequence of their opinions as to the conditions of existence after colotomy has been performed, but I strongly hold to my contention.

The Choice of Operation.

We are now led to consider which kind of colotomy is the best to perform in any particular circumstances. This question of the choice of the operation is of extreme importance.

First, let us take the cases when the *obstruction is in the rectum* and can be easily felt and diagnosed. These can be arranged under several heads.

1. Cases of very complete obstruction. The obstruction having been complete, perhaps, for ten or more days, the intestines are very distended and it is necessary to open the gut at once. Cases of this class are, I think, better treated by lumbar colotomy; for it is only when the intestine is very distended that it is possible or probable that the gut can be opened without opening the peritoneum. My reasons for this assertion will be explained when I discuss the lumbar operation.

2. In the second division the obstruction is well marked and of a few days' duration, and the distension, though not very great, may at the same time be fairly marked. In this class the choice between inguinal and lumbar colotomy may be left to the operator, for there is no great necessity to open the bowel at once. It is better for the gut to be fixed up (say, for twelve hours) till the peritoneal cavity is well blocked off by lymph, and thus made safe from extravasation of feces when the bowel is opened. If the distension is very slight the inguinal operation should always be chosen; but if it is well

marked and the case borders on class 1, lumbar colotomy should be performed.

3. The third variety comprises those cases in which there is very slight or no obstruction, and when the object of surgical interference is to relieve pain, irritation, or bleeding, or to diminish the rapidity of the growth. There is no doubt that inguinal colotomy is then the better method to employ.

If the surgeon like, he can perform inguinal colotomy in all the foregoing conditions if he will use a Paul tube, which may be inserted at once into the distended gut and tied. The motion is then carried away by the tube into a basin under the bed. In this way chance of the peritoneal cavity becoming fouled by feces is prevented.

The question of choice is further affected by the cause for the operation. If it is cancer which gives rise to obstruction only, with no pain and little diarrhea, the surgeon is free to make his own option between inguinal and lumbar. But if the cancer cause great pain, diarrhea, and bleeding, then, if possible, inguinal colotomy should be done; for a good spur can, as a rule, be procured, whereas in lumbar colotomy the making of a spur is much more a matter of difficulty, and is sometimes quite impracticable. When in the rectum there are non-malignant strictures, combined with tubercular, syphilitic, or dysenteric ulcerations, and often with fistulas, the importance and possibility of making a spur again demand inguinal colotomy.

There are other reasons for preferring inguinal to lumbar colotomy. The opening is in front and can be attended to by the patient himself with far greater facility than when it is in the lumbar region. Further, a pad or truss can be readily adjusted to the opening in the groin. The inguinal operation can be performed with much greater ease; the patients usually get well much more quickly, and there is less risk of opening any other viscus than the colon. In all these points the inguinal is an advance upon the lumbar operation.

The three remaining forms of colotomy—transverse, right lumbar, and right inguinal—are very difficult to choose between. Of course, if there is a stricture the position of which can be diagnosed, or if, in cases of ulceration, the end or, rather, the starting-point of the ulceration can be told, then the rule is to perform the colotomy only just above the seat of that stricture, or of that stricture with ulceration. But this can only be discovered when there is a tumor or distension, or when the patient, from the pain and so forth, can indicate the locality.

On the other hand, if the case is uncertain, it is always wise to start with a median abdominal exploration. The exploratory incision should be made above the umbilicus and the hand be passed into the abdomen and down to the sigmoid flexure. It should next be traced upward until the stricture is felt or the narrowing caused by the ulceration be found to cease. The colotomy should then be performed just above the seat of the obstruction. For instance, if the disease is about the splenic flexure of the colon, choose a transverse colotomy; if it is at or extend up to the hepatic flexure, use a right lumbar colotomy; if it extend lower down, resort to the right inguinal operation.

Again, if an exploratory examination by the median incision fail to discover definitely where the ulceration ends or where the stricture is seated in the large intestine, it is wiser to do a right inguinal colotomy, so as to make sure of being well above the diseased part.

Choose the operation which can be done nearest to the disease,—that is to say, if the splenic flexure be at fault, use transverse colotomy. The reason is that the length of the transverse mesentery gives a good chance of making a splendid spur; but this opportunity is not always found in right lumbar and never occurs in right inguinal colotomy.

There is another good reason for colotomizing as near the rectum as possible; the higher one proceeds in the bowel, the less solid the feces become. In left inguinal and in left lumbar

colotomy it seems that the feces are nearly solid, for the greater part of the large intestine is above them and absorbs their liquid portion. In the transverse operation the motions are generally, though not invariably, liquid. In the right lumbar and the right inguinal methods, as far as my experience goes, the feces are always liquid, and are a continual source of annoyance to the patient later on, for motions are retained when solid, but are constantly discharged when liquid.

It is perhaps advisable to add that when the median exploratory incision has been made and transverse colotomy is decided upon, the lower part of the incision is brought together, the upper inch (2.54 centimetres) or so alone being utilized to bring the transverse colon through, and then fixed up into the wound. If the examination reveal the impossibility of a transverse colotomy, or of one lower down,—*i.e.*, nearer the rectum, —the incision is closed, and a right lumbar or right inguinal operation is proceeded with in the manner hereafter to be described.

Anatomy of the Colotomies.

Before describing the various methods of performing colotomy it may be well to devote a little time to the anatomy of the regions to be operated on. Minute details are useless from a surgeon's point of view; but, at the same time, rough surgical anatomy may be found to be of assistance when any difficulties arise in the operations.

Left Inguinal and Right Inguinal Colotomy.

We will first discuss the anatomy of left inguinal and right inguinal colotomy, for the main features are alike, the only differences lying in the character of the gut and the variations in the arrangement of the peritoneum. The skin need not detain us, but the cellular tissue varies greatly, sometimes being very thick and extensive, especially in stout patients, whereas in the thin there may be little or none whatever. The next structure of importance is the external oblique muscle,

whose fibres run in the direction of the superficial incision,—viz., downward and inward. Its thickness, of course, varies with the muscular development of the patient. As soon as this muscle is divided, the internal oblique is exposed, and may be recognized by the direction of the fibres,—viz., upward and inward. The next object of interest is the last layer of muscle, the transversalis abdominis, which may be distinguished by the transverse direction of its fibres, which run from outward directly inward. When this has been exposed and divided, a thin layer of fascia comes to view, which is known as the transversalis fascia, and varies both in thickness and in color. If the operator is not careful this may be mistaken for the peritoneum, and much time be wasted over it under that erroneous impression. Under this lies the subserous areolar tissue, which may present another pitfall; for it is often taken to be the omentum. This is more especially the case when the transversalis fascia has been opened in the belief that it is the peritoneum. This error, however, should never occur, for the fat of the subserous areolar tissue is very different from the fat of the omentum. It is usually darker in color and more consistent, and never bulges up through the opening in the transversalis fascia as the omentum does when the peritoneum is opened; for, when that is the case, the omentum, if near, bulges through and even appears, as it were, to flow through the aperture in the peritoneum.

After the subperitoneal fat has been divided the peritoneum is reached. It is of a slatish-blue hue, and is as variable in thickness as most of the other structures already described. The peritoneum, as is well known, lines the posterior surface of the belly-muscles, and as it approaches the side of the belly is reflected from these muscles over the surface of the sigmoid colon, then over the iliac fascia and iliacus muscle, which occupy the concave anterior surface of the ilium. It is important to bear this in mind in connection with the two errors just referred to; for when the transversalis fascia has been mistaken

for the peritoneum, and the subserous areolar tissue has been thought to be the omentum, and been burrowed about in, the peritoneum which covers the subserous areolar tissue may be pushed off the ilium and the search for the gut made over the surface of the ilium, the peritoneal cavity having never been opened at all.

Another important point in connection with the peritoneum is the way in which it surrounds the sigmoid flexure.

As shown in Fig. 82, the peritoneum lines the abdominal muscles and then passes over the sigmoid, binding it closely down to the ilium (there being little or no play for the gut; in fact, there being little or no mesentery) and then being reflexed over the surface of the ilium.

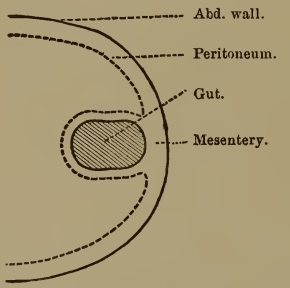

Fig. 82.—Relations of Peritoneum with Mesentery.

Fig. 83 represents the second state, when, in consequence of the reflexion of the peritoneum, there is some movement of the intestine. Here there is what I would term a medium-sized mesentery. In Fig. 84 there is a long mesentery, and thus there is free movement of the sigmoid flexure.

These three conditions only hold to any large extent in left inguinal colotomy, though at times, but rarely, they may apply to the cecum. As a rule, however, Fig. 82 represents the state of the cecum. Though apparently trivial matters, these points are of great importance from the surgeon's point of view, both with regard to operating and to the after welfare and comfort of the patient.

Lumbar Colotomy.

The regional anatomy of lumbar colotomy presents many affinities to that of inguinal colotomy, though there are differences. In the lumbar region the cellular tissue is usually more abundant. The first muscles divided are the external oblique and the latissimus dorsi, which are in the same plane. As in inguinal colotomy, the fibres of the external oblique run downward and inward, and behind this is the latissimus dorsi, the course of its fibres being directed downward. This muscle (as is the case in all regions) is separated by a thin layer of cellular tissue from the internal oblique, whose fibres go upward and inward, the posterior ones running almost directly upward. The next structure is the lumbar fascia,

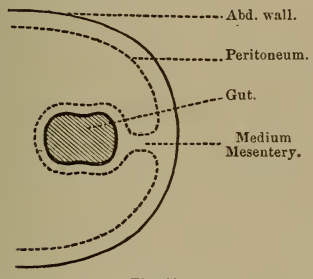

Fig. 83.

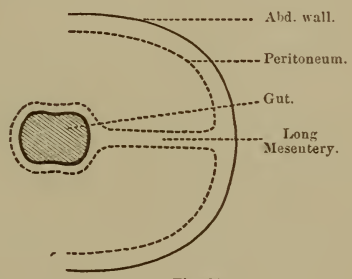

Fig. 84.

Relations of Peritoneum with Mesentery.

which, if the term be permitted, is the tendon of the transversalis muscle, a few of the posterior fibres of which may be exposed as it springs from the fascia. These fibres have a transverse direction. This fascia is very tough and thick, and is usually of a strong, fibrous nature. When the transversalis muscle and its tendon are divided, the anterior edge of the quadratus lumborum may be exposed, or may have to be severed, if it is large. The fibres of this muscle run vertically upward or incline slightly upward and backward. Nearly on the same plane as the quadratus lumborum, and under or posterior to the transversalis abdominis, is the transversalis fascia, which is intimately blended with the fat which is below or behind it, and in

which, or rather among which, the kidney and colon are to be found. In the lumbar region the subserous areolar tissue is very thick and abundant, and at times is difficult to distinguish from the peritoneum which it covers.

The next structure to be exposed is the posterior or outer surface of the large intestine, and then, as used to be said, *without opening the peritoneum*, there appear the longitudinal bands and appendices epiploïcæ

Now, in order to explain when the longitudinal bands can really be seen, and when they cannot, it is necessary to give a detailed description of the large intestine. I am compelled to

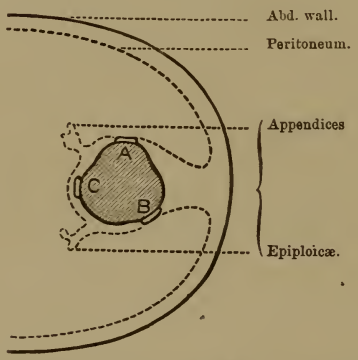

Fig. 85.—Longitudinal Bands and Appendices Epiploïcæ.

do this, for it has been stated that, in lumbar colotomy, when the parietal peritoneum is *not* opened the longitudinal bands and the appendices can be seen, and that thus the large intestine can be distinguished from any other part of the intestinal tract.

We are aware that the large gut, from the cecum downward, has two distinctive features. The first is the presence of the three longitudinal bands, one on the anterior surface of the gut, Fig. 85 (*A*), another on the posterior (*B*), and the third on the inner aspect (*C*). The second characteristic is that attached to the large gut are the appendices epiploïcæ, which occur on no other part of the alimentary canal. I have noticed that the peritoneum, as it is reflected from the anterior abdominal mus-

cles, is loose, and that then, where it commences to surround the large gut, it becomes quite firmly adherent to the intestine at the longitudinal band *A*, It is now so fixed that it cannot be separated from the gut, it covers up band *C*, and is continued on to band *B*. Finally, from the posterior edge of *B* it may pass off the gut on to the posterior part of the abdominal wall. Thus Fig. 85 will show that the outer part of the gut is uncovered by peritoneum. However, I have already explained that this is by no means the usual state of things. If we look at the cases of a medium-sized mesentery (as in Fig. 83), we see that the peritoneum is continued even farther backward beyond and behind the bands *A* and *B* (Fig. 85), and thus forms a mesentery, and that hence little or none of the intestine is uncovered by peritoneum. In cases where there is a long mesentery (Fig. 84) this is even more marked, for then there is practically no part of the gut uncovered by peritoneum.

There is another important point which further disposes of the erroneous idea that the longitudinal bands can be seen without the parietal peritoneum being opened. Take a piece of large intestine covered by its peritoneum and carefully examine it. It will then be observed that when the intestine is surrounded by peritoneum the bands are most distinct, looking like white, silvery lines, about a quarter of an inch (6.3 millimetres) broad. All three of them will usually be found to be well marked. But when examination is made of a piece of large intestine uncovered by peritoneum, no band is visible. Further, if an attempt be made to strip the peritoneum off the intestine at *A* and *B*, the longitudinal bands will be seen to come away with the peritoneum and then become lost; or, if they do remain attached to the gut after the peritoneum has been removed, they are most indistinct and badly marked.

The above will show how mistaken are those who hold that the longitudinal bands, as bright, shiny bands, can be seen without opening the parietal peritoneum. Probably, unknown to themselves, they have divided the peritoneum and so opened

the abdominal cavity, for unless that cavity is opened it is impossible to see the bands on the large intestine.

I contest in the same manner the assertion that the appendices epiploïcæ can be seen without opening the peritoneum. This, again, is an impossibility. These appendices are but small pedunculated masses of fat, enveloped by peritoneum (see Fig. 85) and attached to the inner aspect of the intestine. The diagram shows that to view them it is absolutely necessary

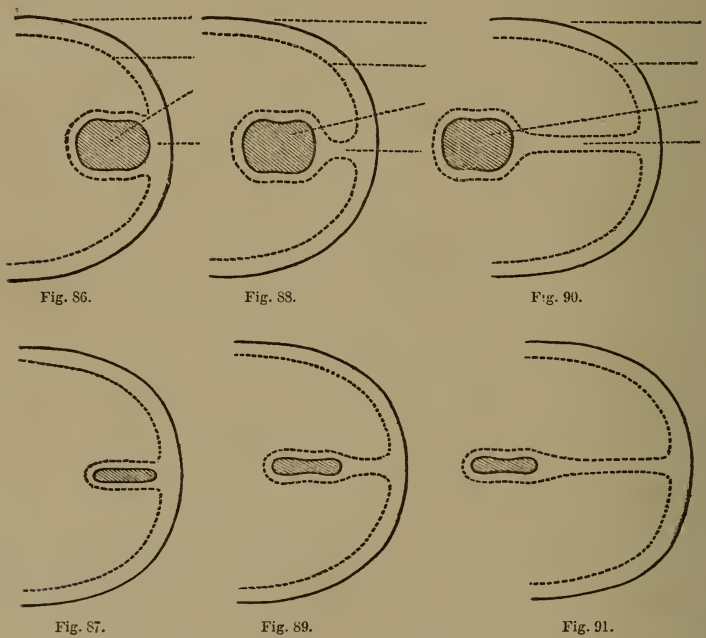

Fig. 86. Fig. 88. Fig. 90.

Fig. 87. Fig. 89. Fig. 91.

State of Gut with Varying Mesenteries.

to open the parietal peritoneum. To see them on the non-peritoneal surface of the intestine would be impossible, for if not covered by peritoneum they would lose their distinctive characters and become small masses of fat, indistinguishable from the subserous areolar fat, which has to be worked through in the downward progress to find the gut.

There is a further point,—the anatomical arrangement of the peritoneum when the gut is *distended* or *collapsed*. When,

as in diagram 86, there is a *distended* gut, with little or no mesentery, the peritoneal reflexions are separated, and hence a good portion of the posterior or outer aspect is uncovered by peritoneum. Less surface is uncovered when, as in diagram 87, the gut is *undistended*. These alterations are of practical importance only when there is *no* mesentery, for when there is a medium mesentery, as in 88 (distended gut) and 89 (undistended gut), or a long one, as in 90 (distended gut) and 91 (collapsed gut), there is no separation to be seen which is of real surgical value.

Transverse Colotomy.

Transverse colotomy, as already observed, is usually combined with an exploratory abdominal section, the incision made being a median abdominal one. The anatomy is as follows: After the skin has been divided some cellular tissue is met with, which varies in amount, and a few small vessels, which generally require attention. The next structure which is seen is the median raphe, and a little to the left of this may be observed the aponeurosis of the internal oblique; this covers the next object for consideration,—viz., the rectus abdominis, whose fibres run in a perpendicular direction from above downward. These fibres are divided, and we come upon the posterior layer of the fascia of the internal oblique; this, too, is divided, so as to expose the subserous areolar tissue and, lastly, the peritoneum. The transverse colon is now reached, and can be identified from its longitudinal bands and appendices epiploïcæ. It has a good mesentery, which is easily to be made out. Obviously, if the large omentum present, it may have to be pushed out of the way before the colon is arrived at.

In this sketch of the anatomy of the region I have described the anterior and posterior layers of the divided tendon of the internal oblique, with the rectus abdominis between them. Hence, it will be noticed that the incision is taken through the rectus muscle, and not through the central point of

union in the middle line, for at that spot there are no layers of the tendon of the internal oblique and no rectus muscle is divided. However, I have purposely gone through the rectus, for it is the best incision, as it leaves a far firmer scar than when the incision is made in the median line. The latter is the usual place, but it is wrongly chosen, for a weak scar is often left, which may lead to hernia in the future.

If a division be made of the *right* rectus, the round ligament of the liver may be seen after the posterior sheath of the rectus has been cut; but it is not advisable that the incision should ever be made except slightly to the *left* of the middle line.

The Operation of Inguinal Colotomy.

We now arrive at the operation of inguinal colotomy. Though the right inguinal mode will receive brief mention, the discussion will be mainly of left inguinal colotomy, which is by far the most frequently performed.

Whenever there is any possibility of choice as regards the anesthetic, it is better to use chloroform,—not that it is safer than ether, but because it presents several advantages from an operative point of view. When under ether, patients are invigorated, but in chloroform anesthesia they are, as a rule, rather depressed and therefore quieter. Thus their breathing is less rapid, and, when the operation is being done, the abdominal muscles do not move so much. Further, chloroform causes a greater relaxation of the muscles and renders them easier to work in, whereas ether appears to stimulate them. If there be this stimulation, the fingers, when inserted in the abdomen, are gripped by the muscles and cannot be used so freely.

Again, with chloroform there is never, or seldom, the straining which is noticed while patients are under ether. This straining, or coughing, naturally tends, when the abdomen is opened, to force its contents through the aperture, and, moreover, makes the muscles rigid. Sometimes, too, the stimulation of ether causes bleeding from small arteries and veins, in conse-

quence of the congestion which is occasioned. This does not occur when chloroform is used, for it lowers the arterial tension. Attention to these details may render the operation easy and comfortable, while a disregard of them may make it difficult and irritating.

The instruments are as few and as simple as possible,—viz., a small scalpel, about half a dozen of Spencer Wells's clips, a pair of dissecting-forceps, scissors, and straight needles.

The patient is placed on a hard couch and anesthetized, the legs and chest well covered with blankets, a mackintosh being over these, and wet towels over the mackintosh. The part—viz., the left or right inguinal region—is well cleansed and cleared of any hair.

Then, about one and one-half inches (3.8 centimetres) inside the left anterior superior spine of the ilium, and parallel with Poupart's ligament, divide the skin and cellular tissue by an incision not more than two inches (5 centimetres) long, and frequently less. With a stroke of the knife sever the external oblique and the other muscles until the subserous areolar tissue is reached. This is picked up with two clip-forceps and divided. As soon as the peritoneum is opened (which may, as a rule, be told from some omentum forcing its way through the aperture), introduce the finger into the opening, and with scissors divide the deep structures up to the extent of the skin-wound. I never use a director, which is a confusing instrument, and tends frequently to split up the structures into layers. If the operator has a keen eye and a light hand, all the structures down to the peritoneum may be divided with rapidity and certainty, and all such perplexity be avoided. As soon as the peritoneum is divided secure it with clip-forceps so as to prevent it being pushed away; moreover, when it is held up, it stops any oozing of blood from the cut muscles passing into the abdomen. A flat sponge, with a string attached (to prevent it being lost in the belly), is introduced to keep the intestines out of the way and to catch any blood that might drain into the abdomen,

while the parietal peritoneum is being carefully sewn to the skin all round by interrupted fine carbolized silk or catgut. This mode of joining the skin and the peritoneum induces rapid healing and lessens the danger of discharge from the muscles finding its way into the peritoneal cavity.

Then the sponge is removed and a search is made for the sigmoid flexure. In most cases it bulges into the wound, and is easily recognized by the longitudinal bands and appendices epiploïcæ, but occasionally the small intestine or the great omentum presents itself. When the large intestine does not appear, pass the first finger into the abdomen, sliding it over the iliacus muscle until you arrive at the intestine, which should be hooked up to the opening with the finger and thumb. If this

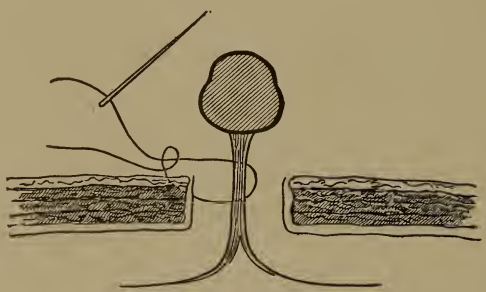

Fig. 92.—Suturing Gut.

maneuvre fail, search toward the sacrum, feel for the rectum, and trace the gut up; should this not succeed, the finger must be passed upward toward the kidney and the descending colon felt and traced downward. This usually has to be done when the mesentery is long,—say, 5 inches (12.7 centimetres) or more. The large intestine is much thicker and firmer to the feel than the small intestine, and can be distinguished from it by the ridges formed by the longitudinal bands.

When the gut has been found and brought to the surface, pass it through the fingers and seek for a piece with a sufficient mesentery. Naturally this can be done only when the seat of the disease is in the rectum or the lower part of the sigmoid

flexure. Generally the part of the sigmoid first pulled up has quite sufficient mesentery.

A good knuckle of gut being pulled through the wound with the finger and thumb, the mesentery is made out behind the intestine. A needle threaded with carbolized silk is next passed through the skin on the outer edge of the abdominal opening, then through the mesentery behind the bowel, back again through the mesentery, and is then tied to the end which had previously gone through the skin. (See Fig. 92.) When the suture is tightened it keeps the peritoneum of the mesentery against the parietal peritoneum. This is the safest and quickest of the many ways suggested for fixing the mesentery, and is as

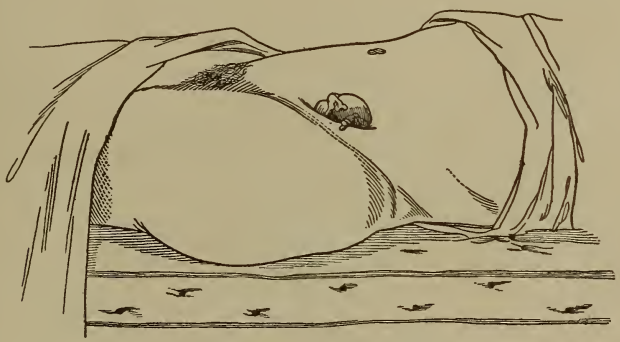

Fig. 93.—Gut After Operation.

efficient as any of them. The harelip-pin, the use of which has been proposed, is clumsy and unnecessary; further, if it has to be removed the mesentery may drop back. Next secure the prominent piece of gut to the edges of the wound. In several places around fix the gut to the skin by passing the needle very carefully, so as not to prick the mucous coat, the sutures being passed only through the muscular and serous coats. If possible choose a longitudinal band to put the needle through, for that part of the intestine is tough and thicker. Pass one suture at the upper and one at the lower angle of the wound, and another on the opposite side to the mesenteric stitch, and put in more if you find that there is too great a gap between the bowel and

the skin-edge in other parts. The more distended the belly is, the more of these sutures are required in order to prevent the small intestine or the omentum from being forced out between the large intestine and the skin-wound.

By this method I have often performed the operation in fifteen minutes. When the operation is finished, the appearance of the gut is as shown in Fig. 93.

The gut is then covered over by some green protective, antiseptic dressings are applied, pads are placed over the opening to prevent any vomiting from causing the gut to break away from the suture, and the whole is held by an ovariotomy bandage.

The next day, or even after six hours, if there is great dis-

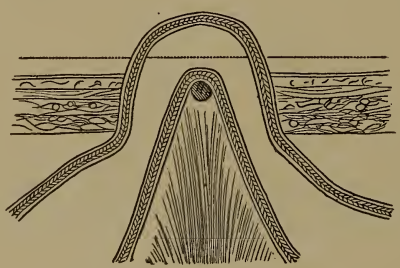

Fig. 94.—Removal of Gut.

tension or much pain, the gut, which by that time is thoroughly glued up to the abdominal opening, may be opened, and wind and feces be allowed to pass out. If the condition of the patient is satisfactory the gut may be left alone for three or four days. To open the gut use scissors, cutting the intestine from above downward to the extent of about one and one-half inches (3.8 centimetres).

There is generally a large quantity of gut, or rather walls of gut, on both sides of the incision. It is now my practice to cut this away till the edge of the gut is nearly on a level with the skin (see Fig. 94); the portion above the dotted line in the figure is removed. Unless this is done there is too great a prominence, for though the walls shrink to a certain extent

they do not contract sufficiently. There is little bleeding, and no pain is caused when the gut is opened or cut away. If there is a good spur a double-barreled opening is now seen. (Figs. 95 and 96.)

The essential point of my operation is to make a good spur

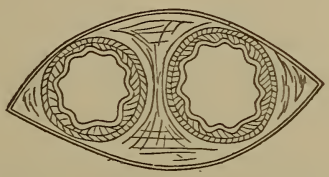

Fig. 95.—Double-Barreled Opening.

so as to prevent feces passing below the artificial opening. Here is the method in brief: To procure a spur means to fix up the gut, by the mesenteric stitch, in such a manner that no feces can possibly pass from the upper part of the intestines beyond

Fig. 96.—Showing Double-Barreled Opening with Directors Passed into Each Orifice.

the inguinal opening into the portion of the gut below the opening; such passage of feces will only further irritate the malignant growth or stricture with ulceration.

Unless such a spur has been obtained, I consider the operation to have been a failure. This is particularly the case at

the present time, when inguinal colotomy is done much earlier than formerly, and when one of the main objects of the operation is to relieve or allay this very irritation. If, through the neglect to make a spur, this irritation is maintained, or even aggravated, and the concomitant diarrhœa and pain are not stopped, we shall merely have added to the patient's discomfort; for he will have a fecal fistula in the groin, instead of a complete and perfect artificial anus intended to relieve the irritation of the rectum below the opening.

The Supplementary Operation.

After I had performed eighteen cases of inguinal colotomy I became able to observe the various points of the operation. I found that there was one condition in which operating in the iliac region might be disadvantageous, not to say distressful, in its results. In more than six out of the cases I noticed that, after the patients had got up and been able to go about, they suffered from a large procidentia of the gut through the inguinal opening. This naturally occasions great discomfort and necessitates the use of a strong truss to retain the intestine in its place, and whenever the bowels act this procidentia occurs. For a long time I pondered over the possible causes of this procidentia and could not easily arrive at a satisfactory solution.

My first theory was that an excessive largeness of the incision in the abdominal wall had brought about this unlooked-for and altogether undesirable effect. In some of my cases, therefore, I limited the incision in the abdominal wall to a length less than two inches (5 centimetres) and found some variability in the results. In one or two cases the procidentia was partially obviated; in others it was as bad as ever. I had, then, to come to the conclusion that my theory had been erroneous, and that an increase or a decrease in the size of the incision could neither cause nor impede this protrusion of the gut. After thinking over the matter, it occurred to me that the

procidentia might have some relation to the length of the sigmoid mesentery, which is sometimes of considerable dimensions, measuring at least four inches (10 centimetres) from the intestine to its attachment to the ilium. It may be seen, from the

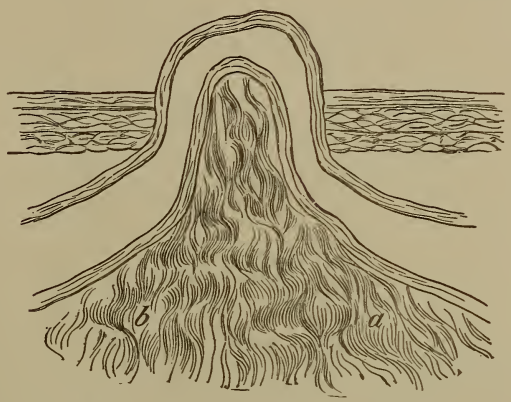

Fig. 97.—Mesentery as Cause of Procidentia.

accompanying figure, that, if the intestine be pulled out only to a limited extent, so as to make a spur, but the mesentery at *a* and *b* be long, whenever the bowels act the lengthy mesentery will easily allow the gut to protrude. The resulting state will

Fig. 98.—Procidentia.

be that shown in the next figure,—that is to say, the intestine will be procidented until the mesentery at *a* and *b* has become taut.

I now perceived what ought to be done in such cases.

After performing the first part of the operation in the usual way,—by making an incision two inches (5 centimetres) in length, one inch (2.54 centimetres) internal to the anterior superior spine of the ilium, the parietal peritoneum being

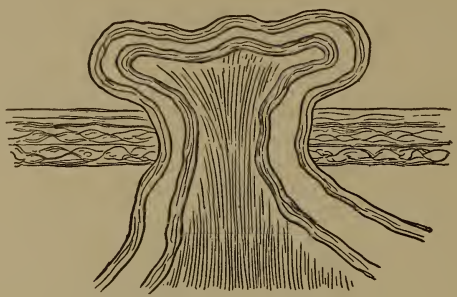

Fig. 99.—Mesentery Made Taut.

stitched to the skin,—I pull out the gut by its lower end until no more can be made to protrude, and do the same to the upper end. The mesentery is now quite taut and a large bunch of intestine, several inches in length, has been drawn through the opening, and is allowed to rest upon the abdomen.

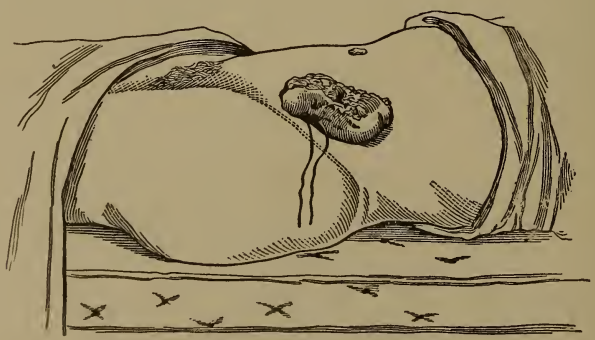

Fig. 100.—Gut Pulled Out to Full Extent.

This is represented in the above figures. Then pass sutures through the mesentery, and several through the muscular and serous coats of the bowel, so as to prevent it slipping back. The mesentery being perfectly taut, no procidentia is now possible.

In two or three days after this first operation the gut is opened so as to allow of the exit of wind, and in a week or so all the gut outside the belly is removed. First of all, apply a clamp about a quarter of an inch from the wound and screw it up tightly. The clamp should be provided with spikes, as

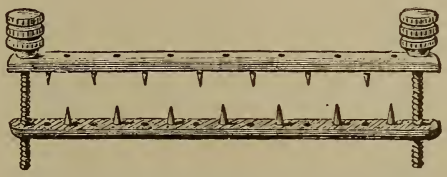

Fig. 101.—Herbert Allingham's Colotomy Clamp.

shown in Fig. 101, and in any case should have a firm and good grip. Unless this is seen to, when the intestine is cut off the clamp will slip off the stump and serious hemorrhage will ensue. My cases testify to the great importance of this provision. Then cut off all the portions of gut above the clamp (see Fig. 102), allowing the latter to remain firmly fixed for

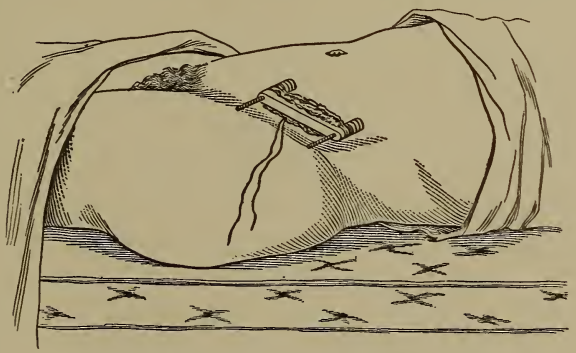

Fig. 102.—Removal of Gut with Above Clamp.

twenty-four hours,—indeed, as long as any slackening of it causes bleeding. When it is taken off, no bleeding will occur. The amounts of intestine I removed in my cases measure from four to twelve inches (10 centimetres to 3 decimetres), and weigh from three to seven ounces.

During the progress of one case I had the opportunity —thanks to the kindness of Mr. G. R. Turner, of St. George's Hospital—of seeing a post-mortem examination on a subject on whom he had performed inguinal colotomy. The patient had been operated on soon after the publication of my first paper on inguinal colotomy, and had lived for many months. There was no procidentia through the inguinal opening, and I was able to discover the reason for this. The sigmoid had no mesentery, or, at any rate, an extremely short one; and the intestine was found to be resting close upon the iliacus muscle and was not movable in the belly. The operation had been a complete success, a perfect spur having been obtained and there being no protrusion. Thus, my theory as to the etiology of procidentia following upon inguinal colotomy was satisfactorily confirmed.

I must confess that this supplementary procedure of cutting away so large a quantity of the gut has somewhat increased the seriousness of the operation. Nevertheless, the exceeding discomfort occasioned by this possible procidentia necessitates a fair grappling with the circumstances.

The fact remains that if the original operation has succeeded, and the patient's life is likely to be prolonged for some considerable time, the descent of the intestine from the inguinal opening must be prevented. It should be remembered that the presence of a slack and lengthy mesentery is the *sine quâ non* of this supplementary procedure. If this long mesentery does exist, and no steps be taken to stay this procidentia, patients who have been operated on for innocent stricture with ulceration of the rectum, probably combined with recto-vaginal or recto-vesical fistulas, will be in the following condition: They have submitted to a palliative operation which may have been entirely successful in its main object,—the relief of obstruction of the rectum,—yet the resulting good has been accompanied by a resultant evil. Through the new opening in the groin the intestine protrudes, and it is a source of constant trouble and discomfort. Some patients have told me that, had they been

aware of this possible sequela, they would never have consented to undergo inguinal colotomy. Their life is simply spoilt, and they are practically prevented from going about and mixing with the world at large in consequence of the constant protrusion of the mass. In cases of innocent stricture, where the patient is likely to have a considerable lease of life, I would strongly recommend the adoption of my supplementary procedure of entirely removing all of the intestine that can be drawn out of the inguinal opening.

On the other hand, in bad cases of malignant disease, when the patient is greatly exhausted and has probably only a few months or, perhaps, weeks to live, I do not deem it wise to carry out any further operation. Be content with pulling the intestine well through the wound, and so make a good spur. If procidentia does ensue it will not be of much moment, for the patient will be practically confined to the bed or sofa, and cannot lead that more or less active life in which his procidentia is so extremely discomforting.

Still, inasmuch as my clamp does away with any risk of hemorrhage, I am not afraid to perform the supplementary operation in selected cases of cancer. I have altogether treated fifteen cases in this manner, with perfect success as regards any after-prolapse, and not one patient has died from it.

A few points in this operation require special mention:—

1. Pain is experienced when cutting through the mesentery, but none whatever when cutting through or into the intestine proper; it is therefore wise to administer ether when removing the protruding portion of intestine.

2. The clamp for holding the intestine must be spiked and have a firm and certain grip. Unless these requisites are provided the clamp will slip and cause severe hemorrhage. Moreover, the clamp should not be applied too close to the wound, but should be placed about a quarter of an inch (6.3 millimetres) distant. It should be kept on till no hemorrhage follows on any loosening or unscrewing. In one case I used no

clamp, and consequently there was considerable bleeding. In another case the clamp was not spiked, and therefore slipped; the hemorrhage was exceedingly sharp, and caused me much trouble. In a third instance I removed the clamp a little too soon, and was obliged to clip two bleeding vessels. Unless all the above particulars with regard to the clamp be conscientiously attended to, the great probability of severe hemorrhage will enormously increase the danger of this supplementary operation, and may, therefore, tend to militate against its adoption.

Important Points in the Operation of Inguinal Colotomy.

I now discuss some important details with regard to the operation of inguinal colotomy, which I observed from my first sixty cases. Unfortunately, I have been unable to trace the history of my later cases, sixty-five in number; but I remember that I had points noted in the first series which were fully borne out by the last sixty-five; for each important point I retain the number of cases of the earlier series.

The Length of the Mesentery.—For purposes of description and classification, I divide mesenteries, as before mentioned, into long, medium, and short. By long are meant cases in which the mesentery connecting the sigmoid with the iliac fossa is at least five inches (12.7 centimetres) in length, or even more. In such cases there may be some difficulty in finding the gut from the inguinal opening, but I myself have never experienced any trouble. In twenty of the earlier cases the mesentery was long.

By a medium mesentery is meant one the length of which is at least two or three inches (5 or 7.6 centimetres), so that it is possible to pull the gut well out of the wound and to make a good spur. There were twenty-nine of this class of mesentery.

By short are designated cases in which there is practically no mesentery at all, and it is, therefore, difficult to fix the gut to the skin. Of even more importance is the circumstance that

there is no possibility whatever of passing a needle behind the gut and forming a good spur. Indeed, no spur can be made. Thus, the patients are left in a miserable condition, for some of the feces pass beyond the opening in the inguinal region toward the growth. There were eleven instances of a short mesentery.

The Spur.—The question of the spur has already been

Fig 103.—Fecal Fistula.

briefly mentioned, but the matter is so exceedingly important that I must be allowed to return to it, and to distinguish clearly between a fecal fistula and an artificial anus.

A fecal fistula is an opening into a piece of gut communicating with the surface of the body, from which feces issue; but,

Fig. 104.—Artificial Anus.

at the same time, some of the feces pass beyond the fistula into the distal portion of the gut.

An artificial anus is an opening in which all the feces pass through the opening on the surface of the body, and none whatever pass into the distal portion of the gut.

Now, if inguinal colotomy is performed and no definite spur is made, feces pass both by the inguinal opening and also into the distal portion of the gut. When, however, a spur is

made feces pass through the opening in the groin, and none can enter into the distal end of the intestine. Thus any fecal irritation of the growth is entirely prevented.

I have tried to put the matter in a clear light, because some surgeons deny the necessity of making a definite spur, and therefore, in my opinion, their operations fail in an exceedingly important point.

It will be observed that in 10 out of my 60 cases no spur was formed. In my first 3 cases I had not come to appreciate the importance of the spur, and therefore did not attempt to

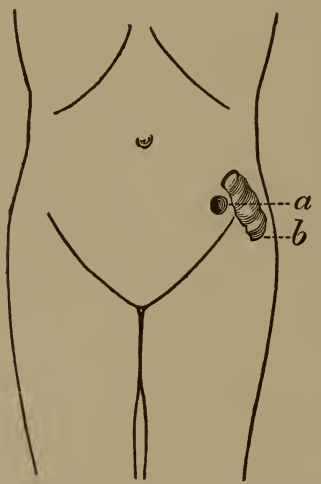

Fig. 105.—Procidentia from Upper Opening.

make one—in fact, I did not use the mesenteric stitch. In 7 of my cases the mesentery was of the short variety and no spur was procurable. In these instances the patients' anatomical peculiarities were the reason of their suffering discomfort from feces occasionally passing per rectum as well as by the inguinal opening, and thus causing pain and irritation.

Prolapse, or Procidentia, from the Inguinal Opening.—This may occur either from the upper end of the gut (*i.e.*, of the part which is continuous with the descending colon) or from the lower end (*i.e.*, of the part leading to and continuous with the

rectum). Sometimes, indeed, there may be prolapse from both ends at the same time.

I have previously observed that it is of far more importance to prevent this condition when patients are likely to have a fairly long lease of life, and it is on that account that I devised the supplementary operation already described.

Now we know (and my own cases lend corroboration) that prolapse occurs only when there is a long mesentery, which enables the gut to intussuscept through the part of the gut which has been fixed,—*i.e.*, sewn up to the belly-wall.

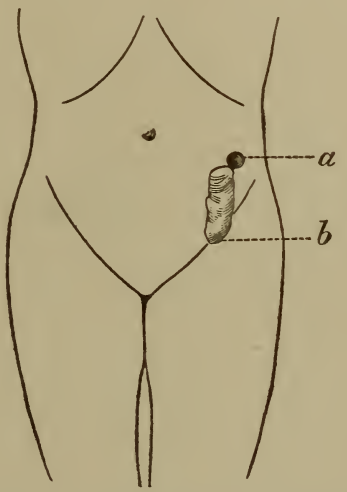

Fig. 106.—Procidentia from Lower Opening.

I arrived at this conclusion from noticing that when there was a short mesentery there was no prolapse.

Again, whenever I had performed the supplementary operation,—*i.e.*, whenever I had drawn out and removed the slack portion of the gut,—there was once more no prolapse.

To obviate this prolapsed condition Mr. Cripps has advised that the gut should be pulled down until it is taut upon the upper end, and that all the slack portion should be returned into the belly, and that then the gut should be stitched up to the skin-wound. No doubt this is a good method, for there can

then be no prolapse from the upper part of the gut. Nevertheless, this plan does not prevent prolapse from the lower part of the intestine when the mesentery is long.

However, the suggestion is of much value, and should always be carried out in malignant cases when the supplementary operation is not advisable.

Lastly, I have seen prolapse occur from both ends at the same time, not only in my own cases, but in those of others.

Prolapse took place in just 16 out of my 60 cases.

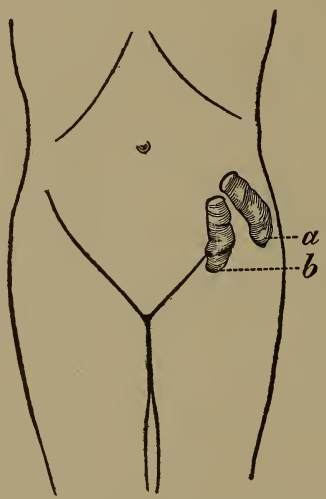

Fig. 107.—Procidentia from Both Openings.

In 5 out of the 16 from upper end alone.

In 6 out of the 16 from lower end alone.

In 5 out of the 16 from upper and lower ends together.

In all of these cases the mesentery was either long or medium in length, though the prolapse did not occur in every instance of a medium-sized mesentery.

Further, prolapse did not take place in any case where the supplementary operation had been performed, in spite of the great length of the mesentery in a large number of these instances.

Action of the Bowels.—The action of the bowels may take place either from the upper or from the lower end of the double-barreled opening resulting from my operation.

The observation of this fact has caused me to alter some details of my procedure. My former practice was to pass the mesenteric sutures through the skin nearer the lower angle of the wound than I do now; for I thought the purpose of the lower opening was to clear out the rectum or allow any retained fecal matter or discharge to come up, whereas the upper orifice had to be kept patent and large for the new anus. I now pass the mesenteric suture through the middle of the wound, for in seven cases the gut, when fixed up to the surface, was twisted so that the bowels acted through the lower opening, the upper one being continuous with the rectum. In most of these cases the mesentery was long; in others it was reported to have been medium, but it may have been in reality long and have been rendered of medium length by the twist. There is much danger in this twisting if the gut is divided and the lower end is fixed up in the belief that it is the upper end.

Right Inguinal Colotomy.

Right inguinal colotomy may be performed in the same way and by the same incision as on the left side; but at times it is wiser to make the incision lower down and nearer to Poupart's ligament. The cecum, or the lowest part of the ascending colon, is the region to be opened. All difficulties may be met by the details previously explained. The question of a spur can never arise.

It is in this operation where the cecum is very distended that Paul's tube is of great value. The peritoneal cavity being opened, the cecum is drawn into the wound and incised, a small tube being instantly inserted and the cecum tied around it. On to the free end of the glass tube a drainage-tube is attached which carries the feces into some vessel far away from the wound. A few extra stitches are then inserted to fix the cecum

to the edge of the wound. In a few days, when the cecum is well glued up to the surface, Paul's tube can be removed.

Operation of Lumbar Colotomy.

By attention to certain rules lumbar colotomy will not be found to be very difficult, but the not uncommon occurrence of accidents forces me to think that all surgeons are not sufficiently alive to the use of considerable precision in the operation, more especially when the bowel is undistended. This indispensable element of precision is often lacking in the directions given in surgical books on the subject.

Many surgeons commence the operation under the impression that it may be impossible to discover the colon, and even the best operators have often experienced difficulties or failures in finding the gut. Indeed, the small intestine has been frequently opened by mistake. Knowing this, and having read Mr. C. B. Lockwood's valuable pamphlet on the development of the colon and the abnormal positions it may assume, and from the experience derived from a case of my own, I resolved to attempt to discover the causes of these failures, and, what is more important, the methods by which they might be obviated.

In previous pages I have fully described the anatomy of the regions encountered in lumbar colotomy, but a little repetition may be excused. It will be agreed that, unless the operator sees one of the longitudinal bands, which are invariably and only found in the large intestine, the intestine should not be opened from the loin. We are aware that these bands are situated, one on the anterior surface, another along the inner part, and the third at the posterior aspect of the gut. It is this posterior band that is usually looked for, and generally supposed to be seen, when the bowel is sought for in lumbar colotomy. Some authorities hold that these bands can be readily detected without opening the peritoneum, but this is only rarely the case. I have observed, from an examination

and dissection of over a hundred ascending and descending colons, that the bands are always more easily and distinctly seen when they are covered by the peritoneum, which makes them hard, prominent, and shiny; whereas, when the peritoneum is stripped off them, these characteristics are lost. However, in eight out of the hundred cases examined, one or two of these bands could be seen, but not very distinctly, on the posterior part of the intestine, although they were uncovered by peritoneum. When the peritoneum only covers about one-half or two-thirds of the circumference of the gut, it is generally reflexed off the gut at the posterior margins of the longitudinal bands on to the walls of the belly. Thus the bands are not visible unless the peritoneum is stripped off; if an attempt be made to expose them, the peritoneum, owing to its being so firmly adherent to the band, is frequently torn and the abdominal cavity opened without the operator being aware of it.

There are various ways in which lumbar colotomy has been performed; the differences are in the direction of the lumbar incision and in the way of fixing up the gut when it has been found.

Several years ago a careful investigation of more than fifty dissections led my father to the conclusion that the best incision from which the colon could be found was one with its centre quite half an inch (1.27 centimetres) posterior and midway between the anterior superior and posterior superior spines of the ilium, and midway between the last rib and the crest of the ilium.

1. Callisen has used a vertical incision. This is made over the point discovered by my father, and takes a vertical direction. The disadvantages are the limited length of the incision that is possible and the difficulty of working down upon the gut.

2. The transverse incision of Amussat.

3. The oblique incision of Bryant.

These last two incisions are the best, for, if room is wanted in difficult cases, they can be enlarged.

When the gut has been found by any one of these incisions, it can be fixed in its place by various modes.

When the gut is distended and has to be opened at once, some surgeons pass sutures through it in the following manner: A suture is passed first through one lip of the wound, then across and through the distended bowel, and finally through the opposite lip of the wound. Another suture is then introduced about an inch from the first one, and is treated in a similar manner. Next, the gut is opened, and the loop of the sutures is pulled out and divided. The four sutures thus formed are tied up, thereby securing the gut to the skin-edges. A few additional stitches may be put in if they are required.

When lumbar colotomy is to be performed the patient is turned on his side, with a firm pillow under the loin nearest the table. What I usually find to make a hard and firm pillow is a large sheet rolled up and tied together with bandages. The instruments employed are a knife, scissors, clips, retractors, and needles. The loin is cleaned; an incision is then made half an inch (1.27 centimetres) behind the point discovered by my father. Whether it be transverse or oblique, the incision should be two inches (5 centimetres) in length,—not more, for this limitation obliges the operator to cut down exactly to the position in which the colon generally lies; whereas, if the incision is five or six inches (12.7 or 15.2 centimetres) long, there is a risk of missing the gut. Its centre should be over the chosen spot, midway between the last rib and the crest of the ilium. Division being made of the skin and the cellular tissue,—the latter of which is sometimes very abundant,—the muscles are exposed and may be rapidly divided until the fascia lumborum is reached. This is opened and the quadratus lumborum is exposed at its anterior edge; in some cases the quadratus may require division. The edges of the wound are then retracted and the fat which lies around the kidney and behind the fascia lumborum is torn through with dissecting-forceps. After this, the gut, if it is distended and has no mesentery, will bulge into

the wound. In straightforward cases, the fact that it is the colon will be shown by its being uncovered by peritoneum; for if the peritoneum is opened, peritoneum will be seen surrounding the gut, together with the longitudinal bands. There will then be no uncertainty as to its being the colon. It is then brought to the surface and very carefully stitched with interrupted sutures all around to the skin-wound. These sutures should pierce only the muscular coat, and should not in any way perforate the gut.

If the case is not very urgent, the gut can be fixed in this manner and left unopened for a day or more till it is all glued up with lymph. It can then be opened.

I am sure, from the anatomical researches previously narrated, that the cases are rare in which there is this absolute certainty of the actual presence of the colon without opening the peritoneum. I therefore at once proceed to explain what should be done if there are any difficulties in finding the colon or in making sure that the part exposed is that piece of intestine.

The difficulties of the operation commence as soon as the transversalis fascia is opened. They arise from various conditions which are caused by the position of the intestine in relation to its peritoneal covering and length of mesentery. I will describe these conditions and explain the operative treatment necessary under each head.

I. What is supposed to be the general position (as shown in Fig. 108) is where the peritoneum covers only one-half or two-thirds of the circumference of the gut, leaving the posterior part uncovered, with the intestine bound down to the loin. According to Mr. Treves, this was the position in 74 out of 100 cases on the *right* side and 64 out of 100 on the *left* side.

My own observations, in which I was assisted by Dr. Penrose and the late Mr. Stewart Pollock, at St. George's Hospital, showed 11 out of 60 cases on the *right* side and 10 out of 60 on the *left* side; thus, by taking the percentage, 18$\frac{1}{3}$

out of 100 cases on the *right* side and 16⅔ out of 100 on the *left* side.

From this it would appear that this so-called general position is less common than is popularly supposed.

When the intestine is in this state, and if a longitudinal band be seen, which must be uncovered by the peritoneum, there should be little or no difficulty in the operation. When, however, no bands can be seen, owing to the peritoneum covering them, the best distinction between large and small intestines is wanting. Therefore, knowing that the small intestine is frequently exposed by opening the peritoneum unwittingly, I refuse to run the risk of opening the small intestine under the

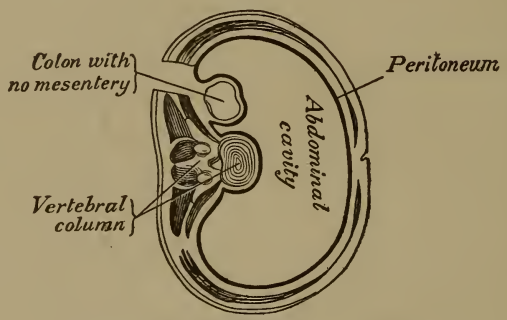

Fig. 108.—Position of Peritoneum in Condition 1.

false impression that the peritoneum has never been opened at all and that I am dealing with the large intestine. Hence, in this condition, if after exposing a piece of intestine I fail to see a longitudinal band, I *intentionally* make a small incision into the parietal peritoneum, and convince myself, by searching for and finding a band, that I am actually engaged on the large intestine. The posterior part of the intestine is then drawn to the surface of the wound (the gut being pulled out as far as possible) and carefully stitched with interrupted sutures all round to the edge of the skin, the mucous lining not being perforated.

The intestine may be left unopened for some hours or, if

necessary, be opened at once, provided that it is carefully attached at every point to the surrounding edges of the skin-wound.

II. In Condition 2, as represented in Fig. 109, the colon is entirely surrounded by firmly-adherent peritoneum, and has a comparatively short mesentery; so that it is absolutely impossible to reach it or to see the longitudinal bands without first opening the peritoneal cavity.

In this condition the ascending and descending colons have a mesentery of varying length.

According to Mr. Treves, it was in 26 out of 100 cases on the *right* side and in 36 out of 100 on the *left* side.

My own observations show 49 out of 60 cases on the *right*

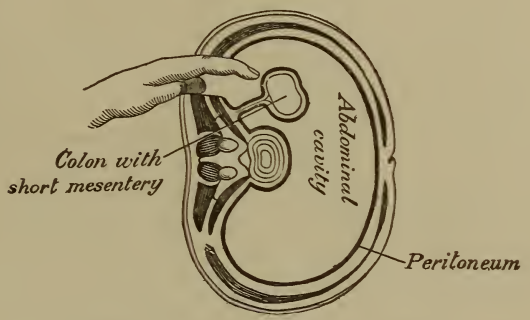

Fig. 109.—Position of Peritoneum in Condition 2.

side and 50 out of 60 on the *left* side; the percentage, therefore, being $81\frac{2}{3}$ out of 100 cases on the *right* side and $83\frac{1}{3}$ out of 100 on the *left* side.

In cases falling under this second head the operator should at first seek for the gut about the subperitoneal tissue, under the assumption that it is in its supposedly normal position; but should this search fail, all the loose pieces of fat must be sponged out of the wound. The peritoneum at the anterior angle of the wound should be deliberately opened (and the edges clipped) just sufficiently to admit the index finger. Pass this finger toward the vertebras and then sweep it over the front of the kidney and the quadratus lumborum. The

gut, although it is in the position shown in the figure (109), can be easily felt and hooked up, and the longitudinal bands be seen. Next open the peritoneum to the extent of the wound and introduce a sponge, with string attached, to keep the intestine out of the way while the edges of the cut peritoneum are drawn up and sutured to the skin in the manner adopted in inguinal colotomy. This entirely shuts off the cut abdominal muscles from the peritoneal cavity. Sometimes this stitching is not easy to do, either because of the depth of the wound or from the firm adherence of the peritoneum to the abdominal wall. The rest of the operation is completed as in Condition 1. If the mesentery be long enough, a stitch may be passed

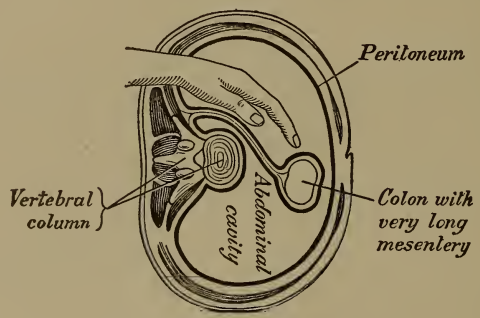

Fig. 110.—Position of Peritoneum in Condition 3.

through it, fixing it to the surface of the wound; thus a good spur may be obtained.

III. In Condition 3, as shown in Fig. 110, the state of things in Condition 2 is much intensified and the mesentery is very long; thus the intestine, although it may rest in the loin, can so alter its position in the belly that, when the operation is done on either side, it may lie on the side of the belly opposite to that in which the incision is made. This is the condition in which it has been said and supposed to be impossible to find the colon from the lumbar region.

If, after proceeding in the manner described under Conditions 1 and 2, you have failed to find the colon, enlarge the

external wound forward and backward sufficient to admit the hand. Then open the peritoneum to a corresponding extent, and, having well cleansed the hand, introduce it into the abdomen. If it is the left colon that is to be operated on, first pass the hand upward toward the spleen and feel for the splenic flexure. Hereupon draw the hand down the intestine until the piece opposite the wound is found and brought to the surface. Failing to find the intestine at its splenic bend, pass the hand toward the rectum or across the abdomen (keeping the back of it in contact with the posterior aspect of the anterior abdominal wall) toward the hepatic flexure, and slip the hand along the large intestine and draw a piece to the surface. Of course, take care to ascertain that this piece of intestine has the characteristic longitudinal bands. The presence of the appendices epiploïcæ may also show that the large intestine has been discovered, but they may be absent from the particular piece drawn out. By the use of this method I have never had any difficulty in finding the colon.

When the large intestine has been found, command it with forceps that will not perforate the gut and introduce a sponge to keep out the small intestine, which may prolapse while the wound is treated as follows:—

At the anterior and posterior parts (if the incision is six inches—15.2 centimetres—long) two inches (5 centimetres) in front and two inches (5 centimetres) behind should be dealt with as in an ordinary case of abdominal section, by passing the sutures through the skin and peritoneum, so as to bring the cut peritoneal edges into contact. But at the middle two inches (5 centimetres) of the wound, where the intestine is to be brought up to the surface, the peritoneum should be sutured to the skin as described under Condition 2, and the operation be completed in the same way. In this third condition a good spur can and should always be made, and when the gut is opened its prominent edges ought to be cut away in the manner described for inguinal colotomy.

I must here mention that most of the details of these suggestions have been arrived at from operations on the dead body; for it has not yet been my fortune to come across cases in my own practice that required such treatment, although I have seen cases operated upon in which these methods would have been extremely advantageous.

When I first advocated the foregoing lines of treatment I expressed my surprise that in spite of the frequency of the operation of lumbar colotomy these details appeared to be so little known or, at any rate, practiced; though I was inclined to believe that they must have occurred to, or been used by, some surgeons. Thus I was encouraged to break the silence on the way of finding or treating the large intestine from the loin. I am still confident that whenever I perform the lumbar operation I shall never have any fear of failing to find the colon.

There are other difficulties which may be encountered in the operation, but they are of trifling importance when compared with those that arise from the movements and relations of the intestine to its coverings.

An empty bowel is, of course, extremely difficult to find if the peritoneum is not opened, but it is easily discovered by the method I have explained. Unless that mode of dealing with the gut is utilized, great trouble and unnecessary disturbance of the cellular tissue may result.

Perhaps, after the tissue has been pulled about and bruised, the surgeon who is afraid to open the peritoneum may do so by accident and thus find the gut. By my plan he will certainly find it. Unless the peritoneum is opened, either knowingly or unintentionally, the operation might have to be abandoned.

A very fat loin may be a source of trouble, and those surgeons who still wish to avoid opening the peritoneum when it ought to be opened may find it expedient to enlarge the incision considerably. This necessity of enlarging the external wound will be spared those who follow my plan, for as soon as

the peritoneum is opened the gut is easily found and can be treated in the way thought best.

In these cases, not only the subcutaneous, but the subperitoneal, tissue may be greatly increased in amount; thus, if the peritoneum be not opened there may have to be a difficult, tedious, prolonged, and unnecessary search in this tissue for the posterior part of the gut, provided, that is to say, that the gut is in its place and uncovered by peritoneum.

We have already discussed the question of the mesocolon and abnormalities of the colon. It is possible that, in rare instances, the colon might be congenitally absent from the side operated upon; then, if the peritoneum has been opened and a good search been made with the hand in the belly, and it is found impossible to drag down any other part of the colon and fix it to the loin, you should close the lumbar wound and perform a colotomy on the other side of the body.

Prolapse is a very important matter. A small prolapse of the mucous membrane alone is of but trivial consequence, but what I refer to is a procidentia of the gut through the loin-opening. I have frequently seen this condition. It may take place not only from the upper, but also from the lower, portion of the gut, and even from both portions together. The upholders of the lumbar as against the inguinal operation assert that this procidentia rarely occurs; but I have seen several cases of it (Figs. 111 and 112 are instances), and it is quite as common as after inguinal colotomy. Its occurrence, therefore, is as much a drawback to the lumbar mode as it was to the inguinal method, till a supplementary operation was devised.

The Spur.—Another disadvantage of lumbar colotomy is the absence of a spur, for, as a rule, it is difficult to pull the gut sufficiently well out of the wound to make a good spur, and, further, unless the mesentery is of a medium length or long, it is not easy to make use of the mesenteric stitch. Moreover, some surgeons do not sufficiently appreciate the importance of the mesenteric stitch, and do not trouble to make one, even

when they can. As already pointed out, unless a spur is made, a fecal fistula is formed instead of an artificial anus. Consequently, in place of all the feces passing by the loin, a certain amount passes beyond the opening to the rectum and distresses the patient greatly. The patient will possibly blame the surgeon for this result, for he may have been assured that, after the operation, no more motion would pass by the rectum. He will be miserably disappointed, then, if a motion should pass beyond the lumbar opening, and, by irritating the

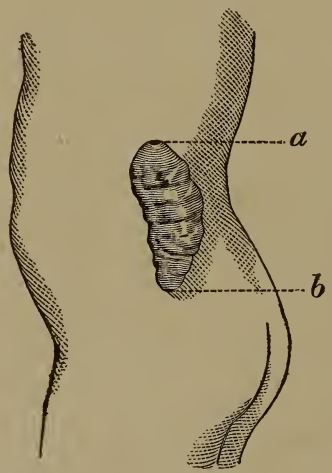

Fig. 111.—Procidentia from Both Openings After Lumbar Colotomy.

growth, cause pain and bleeding and, perhaps, even a continuance of the troublesome diarrhea. If the operation has been done to relieve the above distresses, rather than any obstruction, such after-results from the neglect to make a spur will, I hold, render it a complete failure, and the patient may not unreasonably hold the same opinion.

The anatomical arrangement of the colon, as compared with that of the sigmoid flexure, and the manner in which the operation is usually performed, make it certain that the passage of feces below the opening is a far more frequent cause of distress after lumbar than it is after inguinal colotomy.

The foregoing are more or less remote discomforts. We now turn to certain discomforts, or even calamities, that may occur within a short time of the operation.

Cellulitis is not at all an uncommon consequence of lumbar colotomy, and is naturally most frequent when the gut has to be opened at once. There are several obvious reasons for this: first of all, the depth of the tissue and the looseness of the structures which have to be divided; secondly, from its fixed nature, and from the depth of the wound, it is often impossible to fix the parietal peritoneum to the skin, and thus shut off the

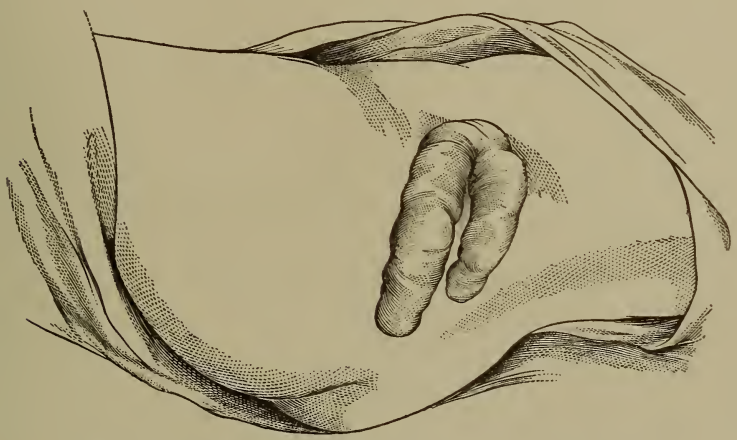

Fig. 112.—Procidentia from Both Openings After Lumbar Colotomy.

various planes of cellular tissue, as can be done in the inguinal operation. Consequently, as soon as feces pass these planes, they become inflamed and suppuration sets in, frequently extending backward to the spine, and even at times burrowing amongst the abdominal muscles in front.

I have seen a patient recover from the immediate effects of the operation, but die in a week or two solely from this extensive, sloughing cellulitis. There is less chance of this happening if the gut is not pricked or opened for, say, twelve hours or two or three days, for by that time the cellular planes are glued off by lymph, and such a calamity is then of rare occurrence.

Peritonitis is another after-result. As far as I am aware, this never takes place unless the peritoneum has been opened and feces have been allowed to run into it. It is most usual when the surgeon has unwittingly opened the peritoneum, stitching the gut to the skin in a rather careless manner, and then opening it, some of the feces thus escaping into the abdominal cavity.

If the peritoneum is intentionally opened, the operator can take great care to close off the peritoneum when the gut comes through it, and, further, can be especially attentive in sewing the gut thoroughly all round to the edges of the skin-wound, so as to leave no space through which feces can find their way into the belly. If this is done in the manner already described, there is very little risk of peritonitis, even if the gut has to be opened at once.

Exhaustion, erysipelas, eczema, and so forth, may supervene on colotomy, as they may do on any other operation.

Right Lumbar Colotomy.

In the performance of right lumbar colotomy exactly the same details must be pursued as in the left side. Precisely the same difficulties may be encountered and the same after-results may happen. A repetition of them is, therefore, unnecessary.

We may remark that on the right side there is usually a fair-sized mesentery to the colon; so that it is even more necessary to be careful in operating and to guard against any after-prolapse. It is not so imperative to make a good spur, for there is a considerable distance between the opening and the rectum. Moreover, the growths or pressure upon the colon, whether transverse or left lumbar, are not in the same ulcerated, painful condition as they are in cases of rectal cancer. As a rule, they are of a hard, slightly ulcerated, and very contracting variety, which leads rather to obstruction than to pain, bleeding, discharge, and so forth.

Transverse Colotomy.

I have previously discussed the anatomy of the parts involved in this method of colotomy. It is not frequently performed, and I have met with only few cases of it,—three in my own practice, one in Mr. W. H. Bennett's, and a fifth under the care of Mr. G. R. Turner, both of St. George's Hospital.

The operation is done in the following manner: An incision is made through the skin and the left rectus abdominis is exposed. Then separate its fibres with the fingers and incise the posterior part of its sheath formed by the divided tendon of the internal oblique muscle. That being done, the subserous areolar tissue is exposed and the peritoneum picked up and divided. The parietal peritoneum is then stitched to the skin all round the wound, as in inguinal colotomy, and for the same reasons. In some cases the great omentum presents. This must be pushed upward toward the stomach, and the large intestine is then found and recognized by its longitudinal bands. The intestine is next pulled forward and fixed well outside the abdomen; if a spur is required, the mesenteric stitch is used as in inguinal colotomy. The gut is then secured to the skin in several places by passing sutures through the peritoneal and muscular coats; great care must be taken that the gut is not perforated anywhere, for, if it is, gas or feces might escape at the prick-holes and peritonitis result.

In my first case I used as an exploratory incision, in the first instance, the incision which is always made above the umbilicus. It was, therefore, made large enough for the introduction of the hand into the abdomen, so as to discover where the obstruction was. When this has been ascertained, and a transverse colotomy has been decided upon, the wound must be closed with the exception of the upper two inches (5 centimetres), the lower part being brought together as in an ordinary abdominal section. The upper two inches (5 centimetres) are treated as in inguinal colotomy, the parietal peritoneum being stitched to the skin, and through these upper two inches (5 centimetres)

the transverse colon is brought and fixed into that space. Unless the case is a very urgent one it is wiser not to open the gut until about two days after it has been fixed up, for by that time all communication of the wound with the peritoneal cavity is completely glued off by lymph. The gut is opened by scissors in a vertical direction. Some days or a week later, if the proceeding is deemed necessary, any excessive portions of the walls of the gut may be removed on a level with the skin.

I have not yet become acquainted with any difficulties in the operation. I imagine that there might be some little trouble in finding the colon, though I cannot understand how that could very well be.

In this operation, as was said with regard to the right lumbar and the right inguinal modes, there is not much necessity to make a very perfect spur, except in cases in which the large intestine communicates with some viscus, such as the bladder. Then, indeed, a spur is most necessary to prevent any feces passing beyond the transverse colotomy-opening into the lower part of the gut, and thus through the fistula,—say, into the bladder. Were this to happen, the purpose of the operation would be entirely defeated.

Prolapse might happen, but I have not yet seen it, and it would scarcely be so likely to occur as in other places, for the transverse colon is, in a way, fixed at its hepatic and splenic flexures, and would thus tend greatly to prevent any prolapse of the gut through the transverse opening.

CHAPTER XXVIII.

ARTIFICIAL ANUS AND FECAL FISTULA.

We differentiate between these two conditions because the former is made intentionally and for the relief of some pathological condition of the bowel wherein it is not desirable to have the feces discharged through the rectum. The latter is usually the result of obstruction, a fecal abscess, strangulated hernia, a penetrating wound, or sometimes a surgeon's failure to make a satisfactory spur in colotomy. In a fecal fistula the feces are discharged both through the rectum and the fistulous opening. In a large percentage of the cases where an artificial anus has been made it is expected to be permanent. On the other hand, a fecal fistula produces great annoyance from the almost constant discharge through the opening; hence, it is desirable to close it. To do this it often taxes all the skill of the operator.

Treatment.—When the gut simply adheres to the abdominal wall and communicates with the external part through a small opening, the tract can frequently be made to heal by careful dieting, thorough cleanliness, and the aid of stimulating applications, such as the nitrate of silver, etc., to the edges of the wound, or by the actual cautery. When these fail the edges of the opening should be pared and adjusted nicely with a sufficient number of catgut or silk sutures. We have used successfully this latter procedure in two cases. To close an artificial anus or a fecal fistula, where the serous surfaces of a loop of the intestine have grown together forming a spur, is much more difficult than to close a simple fecal fistula, for the reason that we have two openings into the bowel, one leading into the upper and the other into the lower portion, separated by a bridge or a pouched portion of the gut covered by mucous membrane; this bridge must be destroyed before the con-

tinuity of the upper and the lower portions of the intestine can be established. Many operations and instruments have been devised for this purpose, but none as yet have proved entirely satisfactory. Perhaps Dupuytren has thrown more light upon the treatment of these conditions than any other one man; he was the inventor of the *enterotome* which bears his name. To destroy the spur take a Dupuytren or Gross enterotome or a pair of strong clamp-forceps the blades of which have serrated edges with a firm catch in the handle, similar to those used for grasping large pedicles, and insert the blades of the instrument into the two openings and press them inward until the major portion of the spur is between them. Then close them cautiously, to avoid including a coil of the small intestine, and fasten the handles tightly together. The instrument is left *in situ* until it comes off of its own accord, thus destroying the spur, which allows the passing of the feces from the upper to the lower portion of the gut. When this has been successfully accomplished, the skin and edges of the opening should be freshened and brought into close apposition by catgut or silk sutures. It is well, also, to put in two deep silk-worm-gut sutures some distance from the edge of the wound, which act as a splint in case of vomiting. Some prefer to destroy the spur by the ligature, which is passed through it as deeply as it can be with safety. That part external to it is then ligated and the ligature allowed to cut its way out. We would suggest to those who use the ligature that an elastic one be selected similar to those described for the cure of fistula by the ligature method. They consist of a solid piece of India rubber, about the sixteenth of an inch (1.7 millimetres) in diameter, which is adjusted tightly and secured by means of a bullet's pressing the two ends together.

When less radical means fail, such as those just described, we are justified in dissecting the bowel loose from the abdominal wall. Then that portion of the bowel including the spur is excised and the two ends of the bowel united by a lateral or

an end-to-end anastomosis. This can be accomplished with little danger as compared with former times, since we have the Abbe catgut rings, the sectional ones of Browkaw, the vegetable or decalcified-bone plates of Senn, or the Murphy button, all of which have proved great boons to intestinal surgery by lessening the mortality of these operations. The abdominal wound can then be closed in a way best suited to the judgment of the operator.

CHAPTER XXIX.

WOUNDS AND INJURIES.

The rectal surgeon is not infrequently called upon to remove from the bowel foreign bodies which have been swallowed, accidentally forced into the rectum, or placed there by the patient for some purpose. Numerous cases of the latter kind have been reported among insane people. Again, criminals have used the rectum to conceal money or tools with which to make their escape. Other cases have been reported where false teeth and articles of dress have been swallowed and lodged in the rectum. One gentleman used this portion of his anatomy for the purpose of concealing a large number of diamonds to escape paying the usual duties. M. Marchetti reports an interesting case where some students, while on a lark, introduced into the rectum of a prostitute all save the small extremity of a pig's tail from which they cut enough of the bristles to make it as rough as possible. Various attempts were made to remove it, but all failed, owing to the bristles catching in the mucous membrane. Finally he slipped a cannula around it, which protected the bowel while it was being removed. Many very interesting cases of the introduction of bottles, knives, sticks, potatoes, turnips, etc., have been reported, but we shall not have time to review them at length. We wish at this time, however, to record a case that occurred in the practice of a former pupil of the author's, wherein a man lost his life as the result of a large stick having been accidentally forced into the bowel for several inches:—

Case XXXIII.—Stick in the Rectum; Death from Peritonitis.

A few months since one of my former pupils, Dr. Hawthorne, presented me with a stick which he had removed from the rectum of a gentleman who died, several hours after the operation, from peritonitis. He gave me the following history of the case: He had been called

hurriedly, on the afternoon of September 1, 1893, to see Mr. B., of Kansas, aged about 65 years. On arriving at the house he found the old gentleman suffering excruciating pain caused by a large stick which was projecting from his anus. He told the doctor that for a number of years he had been suffering from a very annoying itching about the anus, which was made more intense every time the bowels moved, and, to get temporary relief, he had been in the habit of taking a chip or stick and scratching himself. On this particular occasion he had selected a very knotty one about an inch (2.54 centimetres) in diameter and about ten inches (2.5 decimetres) in length (see Fig. 113), which had a hook about two inches from the end. With it he was enjoying the luxuries of a good scratch when his feet slipped from under him and the stick came in contact with the ground and was forced into the rectum for about two inches (5 centimetres); an attempt was made to withdraw it, but he was unable to do so, for the hook had caught in a fold of the mucous membrane. He endeavored to release it by pushing it farther up the bowel and then withdrawing it, but it became fastened again; he made several futile attempts, getting the stick higher up the bowel each time. Finally he gave up in despair and called his wife and son, who carried him to the house and placed him in bed; his son then tried to remove it by force, causing much pain and bleeding. Finally he became frightened and Dr. Hawthorne was called in. On making an examination he found that the hooked portion of the stick had caught in the posterior wall of the rectum about six inches (15 centimetres) above the anus. It was pushed upward until the point of the hook was released; the sharp point was covered

Fig. 113.—Stick Removed from Rectum. (Half natural size.)

by the finger and the stick withdrawn without further difficulty. This, of course, was done under an anesthetic, for it was necessary to force the hand partly into the rectum. There was considerable bleeding, and a rent was found through the peritoneum about three inches (7.5 centimetres) in length. A consultation was advised and Dr. E. W. Baird, of Tescot, Kansas, was called. It was thought best to keep the rectum clean by antiseptic irrigations and the bowel quiet by the use of large doses of morphine and give nature a chance to heal up the rent. The patient continued to grow worse. The temperature was high, the pulse very fast and thread-like, the pains increased in severity, and the abdomen rapidly distended with gas until it was almost as tense as a drum-head. He became unconscious, and thirty-six hours from the time the stick was forced into the rectum the patient died from peritonitis. This case is another example where a life was sacrificed by the laity in trying to avoid paying a surgeon's fee, for there is not a question that if they had called Dr. Hawthorne when the accident first occurred he would have removed the stick without doing any harm to the bowel.

Symptoms.—The symptoms of foreign bodies in the rectum are usually urgent if the body is large enough to cause obstruction, and if the edges are sharp and lacerate the bowel there will be more or less pain, hemorrhage, and the usual symptoms of obstruction. Many times abscess and fistula result from the irritation set up by a pin or fish-bone that has been swallowed long ago.

Treatment.—All foreign bodies should be removed at once and with great care. Not infrequently an accumulation of fecal matter may form a hard lump and act as a foreign body. This, however, will be considered under the subject of "Impacted Feces."

Injuries.

The rectum is rarely the seat of accidental injury. It has been only a short time, however, since we were called to see a severe laceration of the rectum and anus of a boy, 12 years old, who had fallen out of a tree, striking on a picket-fence. Surgical operations about the lower portion of the bowel for hemorrhoids, fissures, and ulceration are of frequent occurrence. We have seen several persons who had injured themselves by

the careless introduction of the end of a syringe, and we have pushed a bougie through the rectal wall by using more force than was justifiable in trying to diagnose a stricture high up. We can readily perceive how one might rupture the rectum during rapid dilatation, as some authors recommend, in cases of stricture, especially where the bowel is ulcerated. Gunshot wounds are of comparatively rare occurrence. We were called to a neighboring city, a little over a year ago, to see a burglar who was shot in the anus by a policeman while attempting to climb a fence to escape. The ball passed through the rectum and came out at the right groin. The wound was washed daily with a bichloride solution and packed with gauze, and the patient made a good recovery. The rectum is not infrequently injured during childbirth. The symptoms of wounds in this locality are similar to those of wounds in other parts of the body, except that of hemorrhage, which may remain concealed within the bowel.

Treatment.—If the wound be lacerated or incised, bring the edges together and suture them, for it is always desirable to get prompt union. Cleanliness must be strictly observed. In case there is severe arterial hemorrhage a ligature should be adjusted around the vessel. If the hemorrhage seem to be general, it can be arrested by pressure applied with a sponge saturated with hot water or by the application of Monsell's powder. When the wound is severe rest in the recumbent position should be insisted upon, and if there be much pain one-fourth of a grain of morphine hypodermatically will relieve it.

CHAPTER XXX.

NEURALGIA OF THE RECTUM.

NEURALGIA of the rectum and coccygodynia are so similar in many respects that we will speak of them under the same heading. Those who treat many cases of rectal diseases now and then have a patient who comes to them suffering from severe pain having its seat in the rectum, in the coccyx, or in the sacro-coccygeal region. It is paroxysmal and is of a lancinating or burning character. Examination will reveal the absence of any heat, tenderness, or swelling, and in many instances no cause whatever can be found that is sufficient to account for the suffering. This condition we have been in the habit of designating *neuralgia of the rectum*. This term is not used for the reason that it is particularly expressive of the condition or the location of the disease, but from the usage of the term *neuralgia*. Similar pains situated in other parts of the body are designated *neuralgia* of the part involved. Recent writers have given this peculiar condition much thought, some claiming that it is only an hysterical condition and others that it is a result of an injury or the misplacement of some organ. It is found more frequently in women than in men, and in those of a nervous temperament, and occurs when there is some general impairment of health or in those who have been injured by a fall or a kick on the coccyx. Sometimes there is a congenital misplacement of the coccyx (see Figs. 114 and 115) to one side or the other, and constant sitting on a hard seat will cause much pain. We remember two cases of this kind in schoolgirls, besides a number of others.

In many of the cases simulating neuralgia of the rectum, if a thorough examination is made, a fissure or an irritable ulcer will be found that is sufficient to account for the pain, for we all know that the pain in fissure nearly always radiates

toward the coccyx. When no local cause can be found we must seek an explanation in some sympathetic or reflex irritation

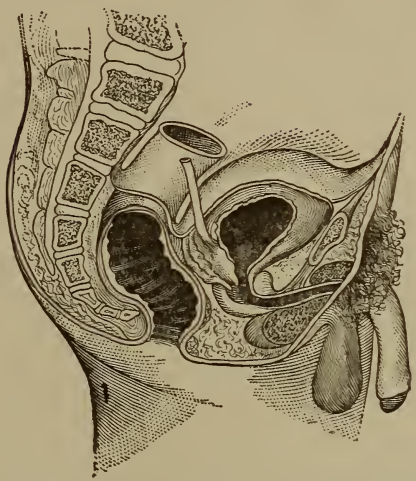

Fig. 114.—Diagrammatic Drawing showing Deviation of the Coccyx Anteriorly.

produced by a misplaced or diseased organ. At times the neuralgia may follow exposure from sitting on cold steps or damp

Fig. 115.—Diagrammatic Drawing showing Deviation of the Coccyx Posteriorly.

grass. Again, irregular habits have been known to get the general system into a state conducive to neuralgia. In the

majority of cases, however, the pain will be due to some local pathological condition in the rectum or is reflected from some other organ, just as in hip-joint disease the pain is reflected to the knee. The pain is increased by violent exercise, and frequently becomes worse after sitting in one position for some time or on getting up or sitting down suddenly or during defecation.

Diagnosis.

The diagnosis is made by the peculiar *location and character* of the pain and the absence of any visible cause. When it is due to a dislocated coccyx there will be much pain when it is pressed upon or moved from side to side. Sometimes it becomes ankylosed and immovable.

Treatment.

In every case search out any local diseased condition that might cause the pain, correct the same, and a good result will follow. When it is due to fissures or ulcers, thorough divulsion or division of the sphincter, followed by a few applications of silver nitrate 15 grains to the ounce, will cure them. When the neuralgia is due to some enlargement or displacement of the prostate, uterus, or other organ, they must undergo treatment first, else any remedial agents directed for the cure of the paroxysmal pains will be of no avail. In some the pain is due to a fractured or dislocated coccyx, which must be removed at the earliest time possible. We have removed the coccyx a number of times for the cure of neuralgia following an injury, and every time the patient was cured.

The number of epileptic seizures frequently diminish after the removal of an offending coccyx. We have a case under observation who had from three to seven seizures daily before operation. For two weeks afterward he did not have one; on the sixteenth day, however, he became slightly dizzy, but did not lose consciousness. It is now two months since the segments of the coccyx were removed, and in one instance only has

he become unconscious. In this case the coccyx was deviated posteriorly (see Fig. 115) to such an extent that it pained him constantly when sitting down or lying in bed. Since its removal he rests comfortably in any position. At this time we anticipate a permanent recovery from his epileptic seizures, for it appears that we have removed the source of irritation which caused them.

Operation.—The operation is performed by making an incision over and down to the coccyx; the periosteum is then removed and the bone clipped off with a pair of ordinary bone-nippers and the periosteum replaced. The wound is then sutured with catgut and we get union by first intention. Drainage is not necessary unless a hemorrhage is expected.

Sometimes the Paquelin cautery-point, passed a few times over the seat of pain, will give immediate relief. We have also derived much benefit, in case of neuralgia of the rectum, from massage over the seat of pain every other day for three weeks, and when there is any tendency to constipation we use abdominal massage and daily injections of warm or cold water, giving preference to the latter. Opiates and narcotics in any form should be discouraged, for those affected in this way are nervous and very likely to get into the *habit* of taking drugs when they are of no real value. If the sphincter is unusually tight we divulse it thoroughly. We have witnessed many remarkable cures from this simple procedure, and in closing would suggest that it be practiced in any case "where the sphincter has any tendency to spasmodic contraction and where no other local cause can be discovered." It is especially adapted to *hysterical* cases.

ILLUSTRATIVE CASES.

Case XXXIV.—Neuralgia of the Rectum.

In December, 1892, I was called to see Mrs. B., aged 31 years, who, judging from external appearances, was in excellent health. On inquiry, she informed me that she had been suffering from severe spasmodic pains in her back off and on for the past six months. They were often so severe that she could not sleep at night. When asked to point to where the

pain was felt she placed her finger over the upper portion of the coccyx, and said that it sometimes went a little higher. Her bowels were regular; she said she had never suffered from piles nor had any discharge from the rectum, and that pain was the only thing that annoyed her. For this she had been using suppositories composed of morphine and belladonna, which gave her only temporary relief. She desired to know if an operation were indicated. On *examination*, the coccyx, anus, and rectum proved to be perfectly sound and no fissure, ulceration, or inflammation of the mucous membrane or adjoining skin could be located, although the examination was thorough. A medium-sized rectal bougie passed up the bowel for ten inches (2.5 decimetres) failed to cause any unusual pain or meet with any obstruction. I must confess that I was at a loss to know what caused the pain. After thinking the matter over I decided that she must be hysterical and only needed some trivial operation to effect a cure. She was advised to have the sphincter muscles divulsed. To this she readily consented. On the following morning, under chloroform, the muscles were thoroughly divulsed in every direction, the rectum was irrigated, and she was placed in bed. On the evening of the third day a Seidlitz powder was given and was followed by a copious movement, after which the rectum was irrigated again. From this time the patient was allowed to walk about the room. She did not complain of the pain once after the operation, and when she was discharged, after one week's treatment, she said that she had never felt better. I had an opportunity of watching this patient for a year or more and know that the pain never recurred. Just why the stretching of the sphincters cured this patient I am unable to fully understand; possibly her sufferings might have been imaginary. This, however, I am inclined to doubt, for she seemed a sensible woman. Again, there might have been some irritation of the terminal nerve-filaments from which the pain was reflected to the coccyx and the source of the irritation was destroyed by the stretching.

Case XXXV.—Neuralgia Due to Scar-Tissue.

Mr. J. M., aged 40, complained of very severe, aching pains almost constantly in the neighborhood of the coccyx. He had been operated on for internal piles one year previous and five tumors had been removed by the ligature. The pains in the region of the coccyx commenced six months after the operation. I made a very thorough examination and no local pathological condition was found other than a considerable amount of cicatricial tissue caused by the operation. Having previously tried divulsion with success, I determined to try it in this case. Chloroform was promptly administered and the muscles were thoroughly

divulsed in every direction. I was not satisfied with this, but took my blunt-pointed bistoury and incised the scar-tissue freely until there was no contraction. The after-treatment was the same as in the previous case except that a full-sized bougie was passed daily to prevent too much contraction. This patient made an uninterrupted recovery and is perfectly well to-day. I have studied this case very closely and have come to the conclusion that the pains were caused by the nerve-filaments being bound down by the *scar-tissue*, and that they were relieved either by the dilatation or the incisions and the permanent relief that followed was due to these operations. And why should not this be? It is a well-known fact that we have similar pains produced in the stump where a limb has been amputated and the nerve has been left long and becomes engaged in the scar, and we know also that the pain immediately stops when the nerve has been liberated.

Case XXXVI.—Neuralgia Due to a Dislocated Coccyx.

A lady, aged 30, general health good, came to me suffering from neuralgic pains about the rectum. She was very nervous, and said that she suffered pain when sitting on a hard seat, and, further, that she believed her trouble was due to a fall received some months previously. Examination revealed a normal rectum, but the coccyx was very prominent and the lower two segments were dislocated backward and attached by a narrow ligament.

Treatment.—The sphincters were divulsed, the displaced segments of bone removed, the wound closed and dressed, and iodoform gauze applied and the patient put to bed. In ten days she was well and six months later the pains had not returned.

CHAPTER XXXI.

SODOMY (PEDERASTY).

This term is used to express unnatural intercourse (abuse) in a variety of ways. At one time it is used to designate intercourse between a man or a woman and some animal (bestiality); or, on the other hand, between man and man, man and boy, and between man and woman, where the male organ is introduced into the rectum for the purpose of gratifying sexual appetite. When of the latter variety (that is, when the penis is introduced *per rectum*) it is called by a different name,—"pederasty."

Pederasty in its strictest sense means intercourse *per rectum* between male and male. It is with some hesitation that we have undertaken to discuss this subject, for the reason that topics of this kind are revolting to the educated and refined mind. There are so many diseases contracted about the rectum and anus during such acts or as a direct result of the same, however, that we do not feel justified in passing over it without at least a slight discussion. We shall confine ourselves to the study of *pederasty* alone, for the reason that the study of the unnatural relations that might exist between man and beast would be out of place in a work of this kind. We have not seen more than half a dozen pederasts in our own practice, and it is with much pleasure that we record the fact that Americans resort to this manner of gratifying their passions less frequently than any other nationality. One can search the literature for reports of such cases in this country and he will find but few in comparison to the large number that have been reported by writers on this subject in other countries. In the United States pederasts are found only among sailors, soldiers, miners in the far West, and sometimes among farm-hands in the rural districts, where there are no prostitutes to satisfy their sexual desires.

We do not know of but a single instance where a person has been detected in this act by our authorities.

This vice is so common in some countries—China, Asia, France, Germany, and Austria—that the most rigid laws have been enacted to suppress it. Yet the French writers tell us that in spite of these precautions pederasts are increasing in number every year. It is said that they have places of meeting, that sometimes large numbers congregate in the same flat or neighborhood, and that in Paris it is not uncommon for professional pederasts (prostitutes) to walk the streets in search of those who indulge themselves in this nefarious practice. It is further stated that they readily recognize each other by their actions and manner of dress, the passive pederast inclining to femininity.

To show the large number of pederasts in France and the physical signs by which they can be detected we will quote from an elaborate paper by Tardieu,* from which the following statements are taken: He says that during attempts made by the police to suppress pederasty in Paris he had the opportunity of examining on one occasion 97 and on another 52 persons taken in the act. He also visited at different times 60 others, besides examining many dead bodies of persons on whom the crime had been practiced. With regard to ages and occupations he gives the following table:—

Age.	Number.	Occupation.	Number.
12–15 years,	13	Servants	44
15–25 years,	65	Merchants' clerks	29
25–35 years,	26	Tailors	12
35–45 years,	28	Military men	12
45–55 years,	18	Others belonging to 59 different occupations	108
55–65 years,	5		
65–75 years,	4		
Not given,	46		

Casper states that persons may be pederasts of long standing and show no signs of it; but Tardieu says that out of 205

* Ziemssen's Cyclopedia, vol. xix, p. 53.

avowed pederasts he has only found 14 in whom it was impossible to find an evident trace of their habits. Out of this total those whose habits are exclusively passive numbered 99; those with habits exclusively active, 18; both active and passive, 71; not given, 17.

With this immense experience, he gives the following as the effects of this peculiar perversion:—

Physical Signs.—Passive pederasty produces excessive development of the buttocks, an infundibuliform appearance of the anus, relaxed sphincter, effacement of the folds, carunculæ of the anal orifice, incontinence of feces, ulcerations, fissures, and so forth.

The infundibuliform anus has generally been considered a pathognomonic sign. It is, however, not always present, but was found in 100 cases out of 170. It may be absent in persons with very fat or very thin buttocks. Tardieu believes relaxation of the sphincter to be fully as true and characteristic a sign. He found it in 110 out of 170 cases.

The natural folds and puckers are effaced and the anus is smooth and polished,—the *podex lævis* of the Romans. The use of emollients to facilitate approaches causes relaxation of the tissues to such an extent as to produce a sort of prolapse of the mucous membrane; so that in several cases it resembled the labia minora of the female.

In active pederasts the penis was found very small or very large.

The large penis is rare, but in all cases the dimensions of the organ are excessive in one sense or the other,—*i.e.*, of the organ when not in a state of erection. Its form is very characteristic. When small and thin it diminishes toward the glans, which is quite small; so that the penis resembles that of a dog. This is the most common shape, and suggests the idea that the tendency of some individuals toward this unnatural vice may be due to an incapacity for ordinary sexual intercourse.

When the penis is voluminous the whole organ does not

taper in size. The glans only is elongated, and the penis is twisted upon itself so that the meatus is directed obliquely toward the right or the left. This distortion is sometimes very marked, and appears more pronounced as the dimensions of the organ are more considerable.

We will now endeavor to show how these miserable people descend so low in the social scale as to become *habitués* to this practice and why, when once begun, they seldom give it up. To do this in the rational way it will be necessary to distinguish between active and passive pederasty.

An active pederast is the one who introduces the male organ. A passive pederast is the one who receives the male organ.

In endeavoring to show how these people contract this deplorable habit we shall follow the classification given by von Krafft-Ebing,* which appears to us to be the most rational one and which is as follows:—

Active pederasty occurs:—

1. As a *non-pathological* phenomenon:—

(*a*) As a means of sexual gratification, in cases of great sexual desire, with enforced abstinence from sexual intercourse.

(*b*) In old debauchees, who have become satiated with normal sexual intercourse and more or less impotent, and also morally depraved, and who resort to pederasty in order to excite their lust with this new stimulus, and aid their virility, that has sunk so low psychically and physically.

(*c*) Traditionally, among certain barbarous races that are devoid of morality.

2. As a *pathological* phenomenon:—

(*a*) Upon the basis of congenital contrary sexual instinct, with repugnance for sexual intercourse with women, or even absolute incapability of it. But, as even Casper knew, pederasty under such conditions is very infrequent. The so-called urning satisfies himself with a man by means of a passive or

* Krafft-Ebing (Chaddock), 7th German edition, p. 426.

mutual onanism or by means of coitus-like acts (coitus *inter femora*); and he resorts to pederasty only very exceptionally, as a result of intense sexual desire, or with a low or lowered moral sense, out of desire to please another.

(*b*) On the basis of acquired contrary sexual instinct, as a result of long years of onanism (masturbation), which finally causes impotence for women with continuance of *intense* sexual desire. Also, as a result of severe mental disease (senile dementia, brain-softening of the insane, etc.), in which, as experience teaches, an inversion of the sexual instinct may take place.

Passive pederasty occurs:—

1. As a *non-pathological* phenomenon:—

(*a*) In individuals of the lowest class who, having had the misfortune to be seduced in boyhood by debauchees, endured pain and disgust for the sake of money and became depraved morally, so that, in more mature years, they have fallen so low that they take pleasure in being male prostitutes.

(*b*) Under circumstances analogous to the preceding, as a remuneration to another for having allowed active pederasty.

2. As a *pathological* phenomenon:—

(*a*) In individuals affected with contrary sexual instinct, with endurance of pain and disgust, as a return to men for the bestowal of sexual favors.

(*b*) In urnings who feel toward men like women, out of desire and lust. In such female men there is a *horror feminæ* and absolute incapability for sexual intercourse with women. Character and inclinations are feminine.

This classification is said to include all the empirical facts that have been gathered by legal medicine and psychiatry.

Since we now understand how these deplorable people become pederasts, we will turn our attention to the diseases about the rectum and the anus that may be contracted as a result of this practice. They are not a few, for the male prostitute may contract just the same diseases in this way that the

female prostitute does about the vagina. To be brief, we shall state that any one of the following pathological conditions may be present as a result of intercourse *per rectum*, some produced as a result of direct contact, others by secondary infection :—

1. Hard chancre.
2. Soft chancre (phagedenic or otherwise).
3. Proctitis (simple or gonorrheal).
4. Ulceration.
5. Fissures.
6. Abscess.
7. Condylomata (syphilitic or gonorrheal).
8. Fistula.
9. Lacerations and abrasions.
10. Incontinence.
11. Ecchymoses.
12. Deformity of the anus.

We shall not attempt to outline the treatment of these diseases in this connection, for the reason that the treatment of each has been given in detail in the other chapters of this book, to which we refer the reader. Before departing from this subject we wish to speak of one other habit through which diseased conditions about the rectum and anus are sometimes produced,—that of rectal onanism (masturbation).

Rectal Onanism.

Rectal masturbation is sometimes resorted to by those who are not permitted to have normal intercourse with women for various reasons. It is more frequently resorted to, however, by old men and younger ones who, from some cause, have lost their sexual power and cannot get satisfaction in the natural way. That sexual orgasm may be excited in this way there is little room to doubt. If such were not the case these people would not submit more than once to the pain and disgust that at first must accompany the act. On the contrary, it is a noted fact that, when once this habit is commenced, its victims seldom have will-power to quit it. That they must get some pleasure out of the intercourse is proved by the actions of those passive pederasts who are neither forced nor paid to submit to the active party, but, on the other hand, seek those who will gratify their desires and, if necessary, recompense them for taking the

active part. The instruments used ordinarily in rectal masturbation are the finger, candles, bottles, walking-sticks, rectal bougies, and, in fact, anything that can be introduced into the rectum to excite sexual orgasm.

There are a variety of pathological conditions that may be present about the rectum and anus as a result of this practice; the most common of these, however, are injuries done to the mucous membrane, weakening of the sphincter muscle, and an inflammation of the rectum. In old *habitués* the mucous membrane, when not ulcerated and inflamed, is very much thickened, glistens, and looks not unlike parchment. We again refer the reader to the other chapters for the treatment of the diseases arising from this practice.

CHAPTER XXXII.

RAILROADING AS AN ETIOLOGICAL FACTOR IN RECTAL DISEASES.

We wish now to invite your attention to a very common cause of rectal disease. We believe that railroading has never before been mentioned in any text-book on diseases of the rectum and anus. If we can show (and we believe we can) that the occupation of conductors, firemen, brakemen, and engineers predisposes them to rectal diseases, then all must agree with us that railroading is a cause of such afflictions. In the United States there are hundreds of thousands of men who earn their living by working on railway-trains. The subject, then, should enlist the interest not only of rectal specialists, but of all surgeons, and more especially those who are engaged in railway-work, for the reason that rectal diseases are so frequently found among railway-employés.

During the last few years it has been our privilege to treat some hundreds of railway-employés for various rectal diseases. About three years ago it occurred to us that, perhaps, the *occupation* of these men might have something to do with causing the annoying conditions found so frequently about the terminal portion of the colon. Since this idea came to us we have given the subject much thought and have made extensive inquiries, both of employés and of railway-surgeons, to ascertain the proportion of said employés who suffer from some form of rectal disease, and their opinion as to whether or not their occupation predisposed them to these troubles. Our investigations lead us to believe that their *occupation* unquestionably plays an important part as a causative factor in these diseases, and, further, that 75 per cent., or even a larger proportion, of all railway-employés who have been running on trains for a term

of five years or more suffer or have suffered from some disease about the rectum and the anus. Dr. W. P. King, the assistant chief surgeon of the Missouri Pacific Railroad Company, and his house-surgeon, Dr. G. F. Hamel, who have looked up the statistics, claim that my estimate is too small. This statement at first may appear startling, yet we feel confident that the experiences of "chief surgeons" will bear us out in this assertion. In talking this matter over recently with Dr. W. B. Outten, chief surgeon of the entire Missouri Pacific Railway System, and Dr. N. J. Pettijohn, chief surgeon of the Kansas City, Fort Scott, and Memphis Railway Company, both agreed with us as to the frequency of these diseases among railway-men. It is not our desire to be understood as stating that we believe 75 per cent. of all the men who go to the railway-surgeon or to the hospital to be treated have some rectal trouble that requires *immediate* attention; but, on the contrary,—for we know that very few who enter the railway-hospital do so to be operated upon for *rectal trouble* alone,—to receive treatment for some disease—as typhoid fever, malaria, pneumonia, etc.—or for some accident that happened to them while in the discharge of their duties. In fact, not more than *10 per cent.* of said employés undergo treatment for these diseases. There are several reasons to account for this. In the first place, these diseases are usually considered chronic and are sometimes contracted before the sufferer entered the railway-service or while employed by some other company. If such be the case it bars them from treatment at the company's expense; for they treat only those diseases contracted by the patient while in the employ of the road and of an *accidental* nature. In the second place, these diseases are usually considered of minor importance and are rarely inquired after by the surgeon in charge. In the third place, many employés believe them incurable; others imagine that the treatment required to cure them is extremely painful and frequently followed by many complications. Hence, these sufferers do not make their afflictions known until after they

have had a profuse hemorrhage, suffered much acute pain, or had an obstruction of the bowel.

It is with much pleasure, however, that we record the fact that, quite recently, two of the hospitals in the West—one in this city and one in St. Louis—have engaged a consultant on rectal diseases and are now offering relief to a class of sufferers who have heretofore been neglected; and we predict that future statistics will show a much larger percentage of rectal trouble than those of the past, because of the fact that employés will soon find out how easily these diseases can be remedied by judicious treatment, and, further, because the rectal surgeon will be on the lookout for them.

We wish to call your attention to the manner in which we think railroading brings about such pernicious results.

In a general way, we think they are the outgrowth of

1. Irregularities in living.
2. Erect position assumed by employés.
3. Irregular, jarring motion of the train.

Irregularities in Living.

When we come to study the habits and every-day life of the average railway-employé, it is not such a difficult thing to understand why he is afflicted in this way. Certainly there is no other class of men who are more careless in their habits and manner of living than those under discussion. This is partly their fault and partly the fault of their occupation, which does not always permit of regular hours for sleeping, eating, exercising, and attending to the calls of nature. Consequently, when nature's laws are violated for any great length of time, an unnatural condition of affairs is brought about and some disease produced. Believing that many of these ailments are due directly or indirectly to the irregularities in sleeping, eating, attending to the calls of nature, and to dissipation, one or all combined, we will deal with these causes separately and in detail.

Irregularities in Sleeping.—All who are at all familiar with railroad-work know that a train-crew does not always have regular hours for sleep. One time the train is several hours late; another time, when their run is completed and the men think that they are going to have a few hours' rest, they are sent out immediately with some other train, to take the place of some conductor, engineer, fireman, or brakeman who is ill, or from some other cause. Again, many of these men do not have regular day- or night- runs, but one that takes from thirty-six to forty-eight hours (Pullman conductors and porters). In the meantime they are deprived of sleep. All of us know from experience how the loss of sleep breaks one up and disturbs the system in general. At last, when trainmen reach the end of their run and have transacted any business that required their immediate attention, they eat something, and then many of them go to bed and sleep from eighteen to twenty-four hours or even longer, frequently remaining in a state of stupor not unlike that of a person who is under the influence of some strong narcotic. They do not take time to exercise, to talk to their families, or to do anything except to eat and sleep until time to go out on their next run. Others go to the opposite extreme. They take a short nap and devote the remainder of the time to dissipation and "doing the town" in general. All this is contrary to the laws of nature. It interferes with the circulation, keeps the nerves in a high state of tension, and materially checks physiological digestion.

Irregularities in Eating.—Irregularities in eating we believe to be one of the most frequent causes of rectal diseases among railway-employés. Physiology teaches us that our meals, to be properly digested and assimilated, should be served at regular hours daily, that we should eat slowly and amid pleasant surroundings, and remain quiet and take very moderate exercise for an hour or so after each meal. Compare this physiological process with the manner in which meals are served to and partaken of by conductors, engineers, firemen, and

brakemen. The longest stop for meals at railway-stations is from fifteen to twenty minutes, part of this time being taken up by the respective duties of the crew. They run into the dining-room or to the lunch-counter and gulp down a quantity of food in ten minutes that should require at least half an hour or three-quarters, if it were properly eaten; then off they go at the rate of twenty or thirty miles an hour. Now, what is the result? Food which has not been properly masticated or salivated is forced into a *seasick stomach*, or one that is being continually rocked from side to side by the swaying motion of the train. An *insufficient* amount of gastric juice is secreted to grapple with large lumps of improperly-cooked meats, breads, vegetables, pastries, etc., under this excitement and constant turmoil. As a result, gastric digestion is materially interfered with. In time, however, the food, partly digested, is dumped into the small intestine, where, for similar reasons, incomplete intestinal digestion is the result. Finally it reaches the large intestine, where it may remain for a variable length of time, depending upon peristalsis and disposition and opportunity to empty the bowel. Owing to the rapid manner in which the food is taken and launched on its course through the alimentary canal, it would be impossible for the glands to secrete a sufficient amount of the digestive fluids to properly lubricate and digest it, even though the other surroundings were good. Consequently the feces contain much less fluid than they should when the lower portion of the colon is reached, and they are prone to collect in large quantities which cannot be moved by peristaltic action. The mucous membrane soon loses its sensitiveness, the glands refuse to secrete, and obstinate constipation of the worst form is the result.

Irregularities in Attending the Calls of Nature.—It is a recognized fact that many railway-men suffer from obstinate constipation and its many evil consequences as the result of the irregular manner in which they respond to nature's demand and refuse to expel the excreta. Frequently they defer an action

from hour to hour or from one day to another, sometimes through gross carelessness on their part, at others to the fact that their *duties* will not permit them to take sufficient time to empty the bowel, and the act is postponed until a more suitable time.

To enjoy perfect health every one should have at least one action daily, and physiology teaches us that the feces collect in the lower portion of the sigmoid and the rectum and remain there until shortly before stool, when peristalsis commences and they are moved downward into the rectum. Then the desire to go to stool is felt. If this warning of nature of the approach of the feces is appreciated and the contents of the rectum promptly expelled, all is well. On the other hand, when this hint is ignored, reverse peristalsis returns the feces upward into the sigmoid, where they remain until they are again propelled into the rectum, causing the sensation just referred to. Now, if this, like the previous one, is ignored, the mucous membrane soon loses its sensitiveness, the muscular coat its tonicity, and large quantities of fecal matter may accumulate in the sigmoid and the rectum without causing the least desire to go to stool. Many persons do not have more than one action a week, and not a few oftener than every two weeks. In fact, we have met very few, if any, railway-men who did not suffer to a greater or less extent from obstinate constipation.

Dissipation.—It is a deplorable fact that a great many railway-employés are given to dissipation and drink large quantities of alcoholic stimulants, which unquestionably predispose them to rectal disease on account of the dilated and weakened condition of the blood-vessels which follows.

Taken altogether, the irregularities of living of those who follow railroading tend to produce a sluggish condition of the circulation, of peristaltic action, and of the secretory glands and organs. These conditions result in not only local, but general, systemic disturbances as well, and are invariably aggravated by constipation, which is unquestionably the most frequent of all

known causes of rectal diseases. Any one of the following diseases of the rectum and the anus may be caused by it.

The diseases to be named have been previously mentioned in the chapter on "Constipation," but we beg to review them again, since they bear directly upon the topic now under discussion.

Hypertrophied Sphincter.—When an action has been deferred for several days the feces accumulate, the watery portion is absorbed; they become dry, hard, nodular, and act as an irritant, exciting the sphincter muscle to a state of chronic contraction, and it becomes strong and hypertrophied.

Anal Fissure.—On account of the hardened condition of the feces they are very difficult to expel, oftentimes making a rent in the bowel at the muco-cutaneous junction that in time becomes an irritable fissure.

Ulceration.—Ulceration of the rectum and the sigmoid is a frequent symptom of persistent constipation, because of pressure on the nutrient blood-vessels by the fecal mass, causing a necrosis of the tissues.

Hemorrhoids.—Constipation is productive of hemorrhoids in several ways: first, because of obstruction to the return-flow of venous blood; secondly, because of venous engorgement of the hemorrhoidal veins during the violent and prolonged *straining* every time there is an action; thirdly, because of the general laxity of the tissues in those suffering from constipation.

Prolapsus.—A prolapsus of the mucous membrane may be the result of a fecal mass's pushing it down in front of it when an action occurs; again, it may be the result of a *paresis* of the bowel caused by pressure on the nerves by the mass.

Proctitis and Periproctitis.—An inflammation of the rectum and the surrounding tissues that may or may not terminate in an *abscess* and *fistula* is frequently caused by constipation, as a result of injury to the very sensitive mucous membrane by the hardened feces, and, further, from the fact that the feces, when long retained, undergo decomposition and expose

any unsound portion of the membrane to the many septic organisms contained therein.

Neuralgia and Coccygodynia.—The fecal mass within the sigmoid sometimes presses upon the neighboring nerves, causing reflex pains to be felt in the region of the sacrum and coccyx. Such pains are usually diagnosed as neuralgia of the rectum and coccygodynia.

In addition to causing the diseases just enumerated, constipation will aggravate any other disease of the rectum or colon that might be present.

Having demonstrated that constipation is very often produced by irregularities in living by those who follow railroading as a livelihood, and, further, that it plays a very important part in the etiology of rectal diseases, we now invite your attention to other causes which are of equal importance from an etiological stand-point, and about which nothing has been written.

Erect Position.

Trainmen, as a rule, are required to spend the major portion of their time while on duty in the erect or semi-erect position. This, we believe, plays an important part in causing rectal diseases. The dilatation of the rectal veins induced by gravity, the shaking motion of the train, and the fact that the rectal veins have no valves to support the column of blood are to be considered. That able teacher and most excellent surgeon, Van Buren, once said, in discussing the etiology of hemorrhoids, that the erect posture assumed by man undoubtedly played an important part in causing that disease, and cited the fact that quadrupeds never suffer from a similar condition. All surgeons must have noticed the frequency of varicose veins of the lower extremities in clerks and others whose duties compel them to be on their feet. The same can be said of railway-employés. We believe we are warranted in going a step farther in claiming that, for the same reason, we may have a dilatation not only of veins of the lower extremities, but of the large

veins about the *rectum*, that sooner or later end in hemorrhoidal disease, ulceration, etc.

Irregular, Jarring Motion.

We believe that the irregular, jarring motion of the train well deserves a place as an etiological factor in these diseases among railway employés. Unquestionably it tends to produce a congestion of the rectal veins similar to that seen in the lower extremities. In making this assertion we not only have the experience of chief surgeons and employés, but our own personal experience. We have frequently noticed that, when riding on the train for several hours, our feet would become swollen while sitting in the upright position or semi-prone when in a chair-car. If we chanced to take off our shoes at night, in the morning we could get them on only with great difficulty. Now, it seems to us that, if the *position* and *jarring motion* of the train would produce this congestion of the veins of the lower extremities in so short a time, it is easy to understand how we might find a *permanent* congestion of the *venous plexuses* about the rectum and anus (especially since these veins have no valves) in those whose duties compel them to spend the greatest part of their time on the train. This condition, in conjunction with the constipation induced by the irregularities of their manner of living, unquestionably predisposes them to numerous diseases found in this locality. For a similar reason *commercial* travelers are frequently afflicted with rectal diseases. Also employés in *factories*, where they are required to be on their feet and the floors are in a constant *motion* as a result of ponderous machinery.

To show the proportion of rectal diseases to all others treated by the railway-surgeon, and also the proportion of the various rectal diseases to each other, we append the following tables, which represent no slight amount of labor on our part. In this connection we wish to extend our sincere thanks to Dr. W. B. Outten, of St. Louis, for kindly placing the statistics at

our command and, further, for the untiring energy displayed by him in going over them with us.

We also suggest that, if many of the managers of *public hospitals* would display a similar amount of system in keeping the record of cases as has Dr. Outten and Dr. King, it would only be a few years until valuable statistics could be collected showing the frequency of rectal and other diseases; but as they are kept at present in many of these institutions the records are valueless.

TABLE NO. 1.—ANALYSIS OF ONE HUNDRED AND SEVENTY THOUSAND CASES.*

[Treated in the hospitals of the Missouri Pacific Railway System from 1884 to 1894, showing the proportion of rectal diseases.]

HOSPITALS.	Year.	Constipation.	Hemorrhoids.	Ulceration.	Fistula.	Fissure.	Prolapsus.	Enteritis.	Enteralgia.	Colitis and Proctitis.	Abscess.	Condylomata.	Non-malignant Stricture.	Cancer.	Total Number of Rectal Cases Received.	Total Number of All Cases Received.
Fort Worth	1886 to 1889	200	67	3	14	. .	1	12	. .	. .	. .	. .	. .	. .	297	7882
Marshal	1886	177	40	5	5	3	3	. .	. .	2	. .	. .	1	. .	236	4068
Sedalia	1886 to 1888	1294	296	4	4	2	1	26	. .	3	. .	. .	. .	1	1631	7485
Palestine	1886 to 1889	153	95	9	35	9	2	20	. .	2	. .	1	1	. .	327	7397
Kansas City	1888 to 1894	1580	658	21	72	3	2	59	. .	13	. .	. .	. .	3	2414	4181
All hospitals	1885	924	125	11	9	2	7	18	8	11	. .	. .	. .	. .	1115	20629
St. Louis	1885 to 1894	2745	1111	239	110	42	24	206	149	28	7	. .	2	3	4666	118928
Totals	. . .	7073	2392	295	249	61	40	341	157	59	7	1	4	7	10686	170570

Total number of cases treated in hospitals 170,570
Total number of cases of rectal diseases 10,686
Percentage of rectal diseases 6.4

When we come to study the above table closely we learn some very interesting facts regarding the frequency of the various rectal diseases to each other. These differ very materially from those given by Allingham, Cooper, and others who attempted to group these diseases. If we leave out those cases

* This table has been compiled from statistics kindly placed at my disposal by Dr. W. B. Outten, of St. Louis, Chief Surgeon of the Missouri Pacific Railroad Company.

diagnosed as "enteritis" and "enteralgia," which properly do not belong in a work of this kind, we still have 10,188 cases of rectal and anal diseases, and we find that nearly every disease found about the rectum and anus is represented. In point of frequency *constipation* heads the list; more than two-thirds of the entire number—7073—entered the hospital to get relief from their constipated condition. Next comes hemorrhoids, with 2392 cases, comprising almost one-fourth of the entire number. Then ulceration, with 295 cases. Next, fistula, with 249; while the other diseases occur much less frequently. Here we have the usual order of things reversed, for in Allingham's analysis of 4000 cases of rectal disease treated at St. Mark's Hospital, London, he treated one-third more fistulas than hemorrhoids. It must be remembered, however, that this institution has a great reputation for the cure of fistula, and, further, that fistula is found much more frequently in charitable institutions than in hospitals where patients pay their own way. Another reason why railway-men are more frequently afflicted with hemorrhoids than with fistula is because of the dilated condition of the rectal veins, induced by habits, the erect position, and irregular, jarring motion of the train. In fact, in our practice, both *private* and *dispensary*, we have been called upon more frequently to treat hemorrhoids and ulceration than fistula. Other surgeons in this country with whom we have discussed this subject have had a similar experience.

We wish just here to append Table No. 2, which gives a synopsis of our work in rectal and anal surgery for one year, 1893–1894, at the Kansas City, Fort Scott, and Memphis Railroad Hospital, for which Dr. N. J. Pettijohn is chief surgeon. In round numbers 800 patients were treated during this time. Of this number 30 entered the hospital purposely to be treated for some rectal disease. Many of the other patients had rectal disease, but considered it of secondary importance to the disease or accident which was the immediate cause of their entering the hospital.

TABLE No. 2.—SYNOPSIS OF THIRTY CASES OF RECTAL AND ANAL SURGERY TREATED BY THE AUTHOR AT THE KANSAS CITY, FORT SCOTT, AND MEMPHIS HOSPITAL, FROM JANUARY 1, 1893, TO JANUARY 1, 1894.

No.	Age.	Occupation.	Diagnosis.	Complications.	Treatment or Operation.	Time of Treatment.	Result.
1	42	Train-dispatcher.	Several large int. hem.	Malaria and indigestion.	Clamp and cautery.	Six days.	Cured.
2	40	Laborer.	Internal hemorrhoids.	Cutaneous tags.	Tags snipped off and clamp and cautery.	Six days.	Cured.
3	20	Baggageman.	Int. and ext. hem.	Constipation.	External hemorrhoids excised. Ligature.	Ten days.	Cured.
4	36	Office-man.	Pruritus ani.	Due to ulceration.	Curetted ulcer, applied silver nitrate gr. xv to the anus twice a week.	Two weeks.	Cured.
5	26	Baggageman.	Internal hemorrhoids.	Constipation.	Clamp and cautery.	Seven days.	Cured.
6	30	Laborer.	External hemorrhoids.	None.	Cut off with curved scissors.	Four days.	Cured.
7	34	Laborer.	Multiple fistulas.	Ischio-rectal abscess.	Ext. sinuses made to communicate with each other and by one incision with the rectum.	One month.	Cured.
8	24	Clerk.	Marginal eczema.	None.	Dilute sulphurous acid.	Three weeks.	Cured.
9	42	Train-dispatcher.	Pruritus and ext. hem.	None.	Excision of piles and application of silver.	Four days.	Cured.
10	38	Laborer.	Extensive ulceration of the rectum.	Very bad diarrhea.	Curetted and cauterized. Balsam of Peru locally.	Three weeks.	Cured.
11	28	Conductor.	Ext. hem. and polypi.	Discharges of mucus.	Ligature and excision.	Twelve days.	Cured.
12	50	Head of construction department.	Very bad internal hemorrhoids with prolapsus.	General debility and carcinoma of stomach.	Clamp and cautery.	Eight days after operation.	Cured of hem.
13	29	Conductor.	Membranous stricture.	Marked constipation.	Incision and dilatation.	Three days.	Cured.
14	30	Laborer.	Ischio-rectal abscess.	None.	Lanced, curetted, and packed with gauze.	Ten days.	Cured.
15	43	Engineer.	Internal hemorrhoids.	None.	Clamp and cautery.	Six days.	Cured.
16	31	Clerk.	Pruritus ani.	Thread-worms.	Division of sphincters and injection of lime-water and silver to fissures.	Two weeks.	Cured.
17	36	Train-master.	Fistulas and protruding internal hemorrhoids.	Phthisis.	Hem. removed by clamp and cautery. Fistulous sinuses divided and packed with gauze.	Three weeks.	Fist. and hem. cured
18	43	Brakeman.	Internal hemorrhoids.	None.	Ligature and excision.	Two weeks.	Cured.
19	32	Engineer.	Fissures (irritabie).	None.	Dilatation and silver gr. xv to ounce j.	One week.	Cured.
20	40	Conductor.	Large internal hem.	None.	Clamp and cautery.	One week.	Cured.
21	33	Laborer.	Ulceration and diarrhea.	Frequent stool straining.	Ulcers curetted, sphincters incised, followed by the local appl. of balsam of Peru daily.	Two weeks.	Cured.
22	26	Section-boss.	Extensive complete fistula.	None.	Groove director passed from one opening to the other out at the anus, all tissues divided, and sinuses curetted.	Three weeks.	Cured.
23	37	Fireman.	Fissures and ulceration.	None.	Dilatation of sphincters and nitric acid to ulcers, followed by daily appl. of silver.	Two weeks.	Cured.
24	29	Engineer.	Marked constipation, fissure, hypertrophied sphincter.	None.	Divulsion of the sphincters and balsam applied.	Ten days.	Fis. cured, con. imp.
25	32	Brakeman.	Prolapsus and internal hemorrhoids.	None.	Removed hem. by clamp and cautery; linear cauterization of mucous membrane.	Eight days.	Cured.
26	31	Laborer.	Polypi.	None.	Ligature and excision.	Ten days.	Cured.
27	40	Conductor.	Internal hemorrhoids.	Prolapsus.	Clamp and cautery.	Six days.	Cured.
28	33	Laborer.	Constipation.	Fissures.	Dilatation, massage, and application.	Nine days.	Cured.
29	29	Fireman.	Internal hemorrhoids.	None.	Ligature.	Fourteen days.	Cured.
30	31	Laborer.	Complete fistula.	None.	Sinus laid open.	Sixteen days.	Cured.

Total number of cases of all kinds treated, 800; total number of rectal and anal diseases, 30; percentage of rectal cases, 3.75.

We include this table for the reason that it gives in brief the percentage of rectal to all other diseases, the age, the diagnosis, the complications, the treatment or operation, the length of time under treatment of each patient, and shows the very large percentage of these cases that can be easily and speedily cured when given that amount of attention that they should have in every railway-hospital.

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